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In the Supreme Court of the United States

OCTOBER TERM, 1964

No. ——

UNITED STATES OF AMERICA, PETITIONER

v.

NATIONAL PRESTO INDUSTRIES, INC.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

The Solicitor General, on behalf of the United States, petitions for a writ of certiorari to review the judgment of the United States Court of Claims entered in this case on October 16, 1964.

OPINION BELOW

The findings of fact by the Court of Claims (App. 35) [1] are as yet unreported. The opinion of the Court of Claims (App. 15) is reported at 338 F. 2d 99.

JURISDICTION

The judgment of the Court of Claims was entered on October 16, 1964 (App. 15). By order dated January 14, 1965, the Chief Justice extended the time for

[1] "App." references are to the Appendix to this Petition, which sets forth the opinion of the Court of Claims and its findings of fact and conclusions.

filing a petition for a writ of certiorari to and including February 13, 1965. The jurisdiction of this Court is invoked under 28 U.S.C. 1255(1).

QUESTION PRESENTED

Whether a government contract setting a fixed price for a supply of goods can be reformed so as to raise that price at the suit of a contractor alleging a mutual mistake as to the extent of the difficulties and expense of performance.

STATEMENT

1. Toward the end of the Korean War, respondent, an experienced artillery shell manufacturer, entered into discussions with the Army looking toward a contract for the production of 105 mm. shells by a new method called the hot-cup, cold-draw (HC–CD) process. The HC–CD process, which had been demonstrated successfully on a pilot-plant scale but had not been used on a full-production-line basis at that time (App. 42–43), constituted a significant innovation resulting in a substantial saving in the steel requirements of a shell factory (App. 43). As a result of the discussions, the Army and respondent entered into tentative letter agreements providing that respondent would designate the production equipment it deemed necessary for the utilization of the HC–CD process at its Eau Claire plant, that the government would pay the cost of the equipment agreed upon,[2] and that

[2] After the completion of the contract, the equipment was to be stored for the government, remaining available for future contracts. The government would pay respondent to keep the equipment "moth-balled."

the shells would be paid for at a fixed price (App. 43–44).

After its engineers had visited the pilot plant and studied the new process at length, respondent submitted a proposed fixed price per shell and a complete schedule of the equipment which it felt would be needed to establish a production line using the HC–CD process (App. 44, 47–50). Respondent designed a significant portion of the equipment scheduled, making several substantial modifications of the equipment in use in the pilot plant (App. 44). Among the types of equipment orginally scheduled by respondent were plunge grinders, devices used for the removal of surface imperfections from the steel shells. The Army contracting officer objected that the HC–CD process should result in no such imperfections and that therefore the grinders were unnecessary.[3] Respondent acquiesced in this position and submitted a new equipment schedule, omitting the plunge grinders. Along with this new schedule, respondent submitted a new fixed-price proposal (App. 16–17, 21, 46–50).

Two contracts were then signed. One provided for the setting up of a HC–CD process production line at respondent's Eau Claire plant, on a cost-reimbursable basis, with the facilities and equipment proposed by respondent (App. 51–57). The second was a fixed-price procurement contract for shells. As later

[3] The contracting officer stated that, if experience showed that the grinders were necessary, he would authorize their purchase. No request for grinders was ever made.

amended, it obligated respondent to produce 1,100,000 shells either at Eau Claire by the new process or at another plant geared to use the conventional process (App. 57–59, 62–64).

Because of delays not at issue here, roughly 800,000 of the 1,100,000 shells had been produced at the conventional plant by the time the Eau Claire plant began preliminary operations. At a conference, both parties agreed that conventional production would be phased out, leaving 180,000 of the 1,100,000 shells to be produced at Eau Claire, so that the HC–CD process could be tested (App. 64–65).

The HC–CD process, as it had operated in the pilot plant and as designed for Eau Claire, did not require lathes, and neither party had foreseen any necessity for their use (App. 25–26, 42–43, 65–71). The initial period of production at Eau Claire proceeded without lathes, but, when the scale of production was increased, respondent found that it was unable to maintain the necessary concentricity of the shells. After extended attempts to solve the problem within the limitations of the process as designed, the parties agreed to install lathes at government expense as a step in the production line (App. 72–75). Once lathes were installed, the difficulties of production at Eau Claire were minimized, and the respondent completed the contract, receiving from the government the agreed-upon price per shell. The court found, however, that as a result of the mistaken assumption of both parties that no turning equipment (*i.e.*, lathes or grinders) would be needed, respondent incurred a

substantial loss on its operations at Eau Claire (App. 25).

2. Respondent initiated the present case against the United States in the Court of Claims, contending: (1) that, in refusing to furnish plunge grinders, the United States had warranted that the HC–CD process would not require turning equipment (lathes or plunge grinders) and was thus responsible for the additional expense resulting from delays in establishing that this equipment was necessary; and (2) in the alternative, that its additional expense was a result of a mutual mistake as to the necessity of this equipment and should therefore be borne by the United States.

The court below rejected the first contention. Proceeding, *arguendo,* on the assumption that the government's refusal to furnish plunge grinders was equivalent to a refusal to furnish lathes, the court held that the government, which was no better informed than the respondent about the HC–CD process, was free to refuse to furnish turning equipment and the respondent was free to refuse to proceed without it. "In the event of an impasse the whole project would be terminated and plaintiff would receive its costs to date. Plaintiff did not take this road. Instead, it acquiesced in the Ordnance position and presented a schedule omitting plunge grinders and proposing a new fixed-price" (App. 21). In short, with neither party knowing more than the other about the need for turning equipment, respondent acquiesced in the government's bargaining demand that it assume

the risk of proceeding, at least intially and for some period of time, without the equipment (App. 30–31, 33). "In these circumstances we cannot find any warranty * * * by the Government * * *" (App. 22).

The court below found, however, that there was a mutual mistake as to "two essential facts—the need for turning equipment; the time and work required to establish that need * * *" (App. 27). The respondent suffered no harm from the first mistake, but the court concluded that it was injured by the second. The court found that "The crucial error was as to the work necessary to show the need for turning equipment. On that point, there was no consideration and no discussion; both sides seemed to believe that such a need would be speedily shown or disproved. There is insufficient ground in the parties' negotiations, or in the transaction as a whole, for saying that the plaintiff, alone, assumed the risk that the period of proof would be long and arduous, costing the large sums it did" (App. 29) although "*some* allowance for this expense was already included in the fixed-price" (App. 31).

In this situation, the court held, reformation of the contract was appropriate to require the United States to pay half the unexpected losses incurred in establishing that the HC–CD process required lathes (App. 34). The court noted that respondent's acceptance of a fixed-price contract, instead of a cost-plus or research-and-development contract, might suggest that all uncovered risks were allocated to the respondent, but it concluded that "that solution would be too facile

* * *" (App. 29). Since it found that this particular risk was not allocated by agreement between the parties and since the government would, the court assumed, have been willing to pay more if it had known in advance of the unexpected costs, the court held that it could reform the contract so that it would reflect the agreement (an equal division of losses) which the court believed the parties would have made if they had considered this particular risk.

Judge Whitaker dissented on the ground that the court was construing a fixed-price contract to be a research-and-development contract, which the plaintiff could have insisted upon but did not. He stated that in no real sense was there a mutual mistake of fact, and that respondent had assumed the risk of doing the work for the sum specified (App. 34–35).

REASONS FOR GRANTING THE WRIT

The decision of the Court of Claims converts the government's promise to pay a fixed fee for specified goods or services into a promise to pay that price *plus* one half of any of the contractor's losses shown to have been "unanticipated" and substantial. Presumably, the principle would be reciprocal; if so, the decision also converts the contractor's promise to furnish performance for the stipulated price into a promise to furnish the goods or services for the agreed price *minus* half of any savings in the cost of performance that can be characterized after the event as unanticipated and substantial. No rule could seem

more clearly calculated to substitute litigation for predictability. The decision, we emphasize, is not a sport, with no precedential value. Billions of dollars are committed annually in government procurement under fixed price contracts. Many of them are indistinguishable from the contract in suit. The Court of Claims frankly acknowledged that it was announcing a novel but nevertheless fundamental principle. Such a basic change in the law applicable to billions of dollars of government procurement ought not to be made without any appellate review.

1. Each year the government enters into thousands of fixed-price contracts involving enormous expenditures of government funds. The Department of Defense alone spent $9,750,000,000 under this form of contract in 1962 and $11,750,000,000 in 1964. The Atomic Energy Commission and other agencies also use fixed-price contracts involving vast sums. Although accurate figures are not available as to the number of contracts which relate either to novel products (such as new weapons) or to novel processes for making familiar products (as in this case), there is no doubt that a substantial part of the heaviest expenditures are directed to research and development. By the same token, a highly significant percentage of the government's fixed-price contracts involve a measure of experimentation by the contractor.

The reasons for the use of fixed-price contracts are obvious. By agreeing in advance on the total price, gov-

ernment agencies can plan for their budgetary needs with a certainty impossible under cost-plus arrangements. Fixed-price contracts also give an incentive to efficiency not present in cost-plus agreements; accordingly, in the aggregate, they tend to reduce costs. For these reasons, federal statutes and the Armed Forces Procurement Regulations express a decided preference for the fixed-price contract over other types of contract in which the risk of unexpected costs is not allocated by the agreement. See 10 U.S.C. 2306(c) and 32 C.F.R. (1954 ed., sub-part D) 3.409–3.411. This policy has been urged upon the Executive branch by Congress and has been adopted by the responsible Cabinet officials. See testimony of the Secretary of Defense, Department of Defense Appropriations for 1964, Hearings before the Committee on Appropriations of the House of Representatives, 88th Cong., 1st Sess., pp. 201, 461.

2. The effect of the decision below is to make it doubtful that the fixed price is indeed fixed. Thus the court below has stated (App. 32–33):

> * * * To do justice here we need go no further than formulate and apply a rule for cases of mutual mistake in which the contract, properly construed, allocates the specific risk to neither party—and the side from whom relief is sought received a benefit from the entire work of the type it contemplated obtaining from the contract, and would have been willing, if it had

> known the true facts from the beginning, to bear a substantial part of the additional expenses. Cf. *Virginia Engr. Co.* v. *United States*, 101 Ct. Cl. 516, 532–33 (1944).
>
> For such a case it is equitable to reform the contract so that each side bears a share of the unexpected costs, instead of permitting the whole loss to remain with the party on whom it chanced to light.

The meaning of the formulation is made clear by the facts of this case. Relief is to be granted even where the existence of difficulties is appreciated if there was failure to realize their extent. That a risk is not explicitly stated in the contract need not mean that it was wholly unconsidered; here, the court found that some risk of delay and increased cost in proving or disproving the workability of the HC–CD process was assumed by respondent (App. 30–31) but that the full extent of the risk was unappreciated by either party. The speculative assumption that the government would have been willing to bear a substantial part of the additional expense does not mean that the government received unanticipated benefits, but only that the benefits for which it bargained were furnished at an unexpected cost by the contractor.

3. One flaw in the Court of Claims' analysis is that it defeats the very function of a fixed price contract: to allocate the risk of the unexpected upon the contractor. Both parties may confidently assume, even though the work is experimental, that the job will go smoothly and that no untoward difficulties will arise; but that does not mean that they have overlooked the chance

that the unexpected will occur or that there is any mistake as to where the burden will fall if trouble does occur. Both parties to a fixed price agreement know that it involves risk-taking and that the risks encompass the unexpected. In exchange for assuming the hazard that the expenses will prove unexpectedly high and the contract result in a loss, the contractor gains the chance that he can sharply reduce expenses and obtain an abnormal profit because of a "mutual mistake" as to assumed, but non-existent, difficulties of performance. In exchange for foregoing the possibility that it could have obtained performance far more cheaply on a cost-plus basis, the government receives an assurance that it will know in advance exactly what it must pay and that the contractor will bear any unexpected costs, *i.e.*, any costs which, because of a "mutual mistake," neither party anticipated.

For these reasons all courts have heretofore held with rare exception, that unanticipated costs are not even a ground for rescission of a contract. 3 Corbin, *Contracts* (1960), § 598.

The second flaw in the Court of Claims' analysis is that it imposes upon the parties a wholly new agreement to which they never assented. This is not a mere case of recission.

Respondent never asked to be released from the contract and the effect of the decision below is not to rescind the contract. Instead the court undertook to impose a new contract by speculating as to what the parties would have agreed to in the first place had they seen more accurately into the future. We

know of no other court which has made unanticipated difficulties of performance the basis for reforming a contract so as to require one party to pay the other more than the fixed fee agreed upon for the goods or services.[4] "If two parties are caused to enter into a contract by reason of their common ignorance or common mistake as to some fact, but for which they would not have agreed, this may be ground for rescission, but it is not ground for reformation. Proof of such a mistake as this does not show that the parties have ever expressed assent, orally or otherwise, to any contract other than the one which is written. That writing truly expresses the only terms on which they have ever agreed. It may be subject to rescission for mistake; but there is no other agreement in accordance with which it can be 'reformed'." 3 Corbin, *Contracts* (1960), § 614. A rule of contract law followed, with rare if any exceptions, for many decades and uniformly endorsed by the courts and commentators forms an unusually solid foundation for government reliance in developing procurement practices. The rule denying reformation for this kind of "mutual mistake" is such a rule. See *Restatement of Contracts*, § 504, comments (b) and (c); 5 Williston on *Contracts* (Rev. ed. 1938), §§ 1548, 1549; *Hunt* v. *Rousmaniere* 1 Pet. 1, 14–15; *Hedges* v. *Dixon*

[4] The nearest approach to such a precedent is found in two prior decisions of the same court, suggesting the rule of law made explicit in this case. *Harrison Engineering and Construction Corp.* v. *United States*, 107 Ct. Cl. 205; *Dillon* v. *United States*, 140 Ct. Cl. 508.

County, 150 U.S. 182, 189; and *Manufacturers' Finance Co.* v. *McKey*, 294 U.S. 442, 449.[5]

4. Each of the conditions for reformation specified in the decision below will be present—or, at the least, arguably present—under many of the experimental contracts entered into by the government and private contractors on a fixed-fee basis. Nor can the unsettling consequences be readily forestalled by amending the language of procurement contracts. To begin with, tens of thousands of fixed-price contracts are now outstanding. Moreover, there is a question, under the decision below, whether the rights and duties of the parties to future fixed-price contracts would be affected by an additional clause reiterating the contractor's obligation to perform for the fixed price regardless of unanticipated difficulties. The government believes it is entitled to continue to operate under the rule long recognized by the Court: "[W]hen the scope of the undertaking is fixed, that is merely another way of saying that the contractor takes the risk of the obstacles to that extent. *Carnegie Steel Co.* v. *United States*, 240 U.S. 156, 164. *Globe Refining Co.* v. *Landa Cotton Oil Co.*, 190 U.S. 540, 543, 544." *Day* v. *United States*, 245 U.S. 159, 161. We think that the reversal of that basic rule of contract law by the court below is as wrong in principle as it

[5] See, also *e.g.*, *Maryland Casualty Co. v. United States*, 169 F. 2d 102, 111 (C.A. 8); *Russell* v. *Shell Petroleum Corp.*, 66 F. 2d 864, 867 (C.A. 10); *Rock-Ola Mfg. Corp.* v. *Filben Mfg. Co.*, 168 F. 2d 919, 923 (C.A. 8); *Hearne* v. *Marine Insurance Co.*, 20 Wall. 488, 490–491; *Moffett, Hodgkins and Clarke Co.* v. *Rochester*, 178 U.S. 373, 384–385.

will be upsetting in practice. At the very least the innovation merits full consideration by the Court.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that this petition for a writ of certiorari should be granted.

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JOHN W. DOUGLAS,
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FEBRUARY 1965.

APPENDIX

No. 370–58

(Decided October 16, 1964)

NATIONAL PRESTO INDUSTRIES, INC. v. THE UNITED STATES

Robert E. Sher for plaintiff. *Isadore G. Alk, Abraham J. Harris, James H. Heller* and *Maslon, Kaplan, Edelman, Joseph & Borman* of counsel.

David Orlikoff, with whom was *Assistant Attorney General John W. Douglas*, for defendant.

Before JONES, *Senior Judge;* WHITAKER, *Senior Judge;* LARAMORE, DURFEE, and DAVIS, *Judges.*

OPINION

DAVIS, *Judge*, delivered the opinion of the court:

Toward the close of the Korean hostilities, in the late fall of 1952, the Ordnance Department of the Army sought proposals for the commercial production of 105-millimeter artillery shells. Along with other firms, plaintiff, a fabricator of pressure cookers which had turned to the manufacture of cartridge cases and shells during and after World War II, submitted a plan for the production of the shells (at its plant at Eau Claire, Wisconsin) by the conventional hot forge method—involving considerable heat twice applied, and two turning steps at which large amounts of excess steel are removed from the shell. While the proposals were under consideration, Ordnance mulled over a change in the procurement from the conventional method to the new hot cupcoid draw process. The central advantage of this mode is

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that the steel is heated only once and there is much less excess metal to be removed. The plaintiff already had an Ordnance contract for making 105-millimeter shells by the older method at its factory at Menomonie, Wisconsin, and its initial response to the Army's suggestion of a further contract was based on that system. However, plaintiff then considered conforming its proposal for Eau Claire manufacture to the newer process. In June 1953 the parties entered into two letter contracts, one for establishing lines to produce shells at Eau Claire and the other for the production there of one million 105-mm. shells. It was shortly agreed that the Eau Claire plant was to use the hot cup-cold draw method. After production of the shells immediately needed, the plant was to be retained in stand-by condition for the Army's use.

Under these letter contracts, which were preliminary to formal agreements, the plaintiff was to propose the equipment (and facilities) it believed to be needed for production. The defendant was to pay for the items upon which agreement was reached; in that sense the equipment was to be government-furnished property. Some months were consumed in plaintiff's preparation of its proposed equipment-schedule, and of a suggested fixed-price for making the shells by the new method. There were some tentative discussions. On November 10, 1953, the parties met to consider the final schedule to be incorporated in the formal facilities contract which would supersede the letter contract on facilities. Of concern to us was the discussion of the need for plunge grinders—devices mainly used to remove surface inperfections in steel. Plaintiff felt that the six new shell lines at Eau Claire should include 24 plunge grinders, four to each line. Ordnance thought them unnecessary; its principal representative informed plaintiff that he would not approve a facilities schedule which included plunge grinders; he also said that, if the grinders proved necessary in the course of performance, he would sanction their acquisition.[1] The plaintiff

[1] Plaintiff insists that Colonel Haskell, the chief Ordnance representative, went further and declared that the Army would be responsible for the consequences of omitting the plunge grinders. One of plaintiff's witnesses testified to that effect and produced an internal memorandum for plaintiff's own files in which he had put down, on the day after the conference, that understanding of the Colonel's position. A witness for the defendant, who had been present at the meeting, flatly denied that any such statement had been made. Colonel Haskell was in Europe and unavailable for the trial. The Trial Commissioner,

thereupon submitted its new price and a schedule omitting the grinders; that equipment was not included in the formal contracts which were executed in early December 1953. Production of the shells was to commence, after installation of the facilities yet to be acquired, in July 1954.

Plaintiff then began the detailed process leading to the acquisition and installation of the necessary equipment. In March 1954, before completion of the contractor's engineering studies and its placement of orders, the defendant told plaintiff that it was drastically curtailing its procurement of 105-mm. shells and that both plaintiff's Eau Claire and Menomonie contracts were terminated for all production scheduled for delivery after April 30, 1954. Following negotiations for a decrease rather than elimination of production, the defendant rescinded its notice of termination of the Eau Claire contract and, on June 30, 1954, the parties entered into a supplemental agreement (to that contract) providing that plaintiff should produce a new total of 1,100,000 105-mm. shells (in place of the former totals of the shells to be made at Menomonie and at Eau Claire), at a fixed price of $5.2499 per shell, to be manufactured at either plant as plaintiff wished. Production at Menomonie would follow the conventional hot forge method while the new hot cup-cold draw system would be used at Eau Claire.

Because the Menomonie plant was already operational, plaintiff began to supply the new total of 1,100,000 shells from that factory. By the end of August 1955, over 800,000 shells had been shipped from there. Since preliminary operations at Eau Claire did not begin until the summer of 1955, it appeared that the full quota of shells would be produced at Menomonie by the conventional process before the new method could be fairly sampled at Eau Claire. The Government was anxious to test the hot cup-cold draw system. Early in September 1955, the parties agreed that the con-

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who heard the witnesses, made no finding, one way or the other, on this point; he admitted some reluctance to make a finding on the basis of the sharply disputed oral testimony and in the absence of any written record, accepted by both parties, of the conference. We have reviewed the evidence on the issue and do not feel justified in concluding from the cold record that plaintiff has borne its burden of showing that such a promise was made by Colonel Haskell. The oral testimony is in square conflict, and in the absence of a finding of credibility by the Commissioner we have no reason to prefer one version over another. The plaintiff's internal memorandum cannot be controlling.

ventional operations should be reduced so that some 180,000 shells would be left to be manufactured (by March 1956) under the new process.

Plaintiff suffered difficulties of various kinds in making the hot cup-cold draw system fully functional at Eau Claire. Only one of these problems is now alleged to be the defendant's responsibility—the need for turning equipment to shave excess metal. The first batch of shells, produced relatively slowly and using only one of the six lines at Eau Claire, did not require any such turning. But as production increased there, in the fall of 1955, it became doubtful that good shells could be made without a turning step; the shells were not concentric when they came out of the hot forge and some shaving (but still less than in the conventional method) was necessary. A final decision on this point was put off until April 1956 when it was decided by the parties to purchase a number of new lathes for this purpose (plunge grinders were never considered). Meanwhile, plaintiff, with the consent of Ordnance, transferred some older lathes from the Menomonie plant to perform this turning function. The remainder of the contract shells were produced at Eau Claire, using these Menomonie lathes. Production of the 180,000 shells to be made by the hot cup-cold draw process was not completed until September 1956. The defendant paid for the additional equipment and also remitted the full contract price. Nevertheless, plaintiff lost considerably over $700,000 on its production at Eau Claire. It attributes some $743,000.00 of this loss to the lack of turning equipment, timely furnished and adequate; plaintiff's claim is that it expended large sums (on labor, overhead, and materials) in trying for a long time to produce the shells without turning, and thereafter in using the Menomonie lathes. These expenses plaintiff charges directly to defendant's refusal to include plunge grinders in the original schedule of equipment and facilities.

I

The case has been wholly tried in this court [2] and we must decide whether the Government should assume all (or part)

[2] Plaintiff did not seek relief from the contracting officer or the Board of Contract Appeals, and there is no administrative record on the factual issues in the case. At the trial before our Commissioner, both parties introduced

of the loss plaintiff incurred or whether that loss must stay with the contractor which has thus far shouldered it. The first subdivision of the claim is that the defendant broke its contractual obligation by refusing to authorize the acquisition and use of turning equipment at the outset of the contract. The theory is that, since the Government was to furnish the facilities for the production lines at Eau Claire, it was required to supply adequate devices to make the 105-mm. shells by the new hot cup-cold draw method. By omitting the plunge grinders (requested by the plaintiff) from the equipment to be furnished, the defendant (it is urged) breached an express and an implied warranty of adequacy, and also wrongly imposed its own mistaken judgment on the plaintiff. It is of no consequence, on this view, that the contractor initially proposed plunge grinders and later recommended and used lathes. The grinders were sought, it is said, because plaintiff foresaw from the beginning that it would still be necessary, even under the new process, to remove steel from the shells through use of some sort of turning equipment; the lathes which were actually utilized performed exactly that function.

On this phase of the case, we can assume, without deciding, that the defendant would be liable under the contract if the parties had left the specification of the government-paid-for equipment to be determined after the contract was made, and the defendant had then refused to authorize a tool or device

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evidence; neither objected to the use of *de novo* evidence, sought a stay so that disputed issues of fact could be determined administratively, or raised the point that administrative proceedings should have been had. After the Commissioner's report had been submitted and the plaintiff had filed its brief and exceptions, defendant moved for the first time to suspend the proceedings so that the plaintiff could present any disputed questions of fact to the contracting officer and to the Armed Services Board of Contract Appeals. Plaintiff opposed on the ground, among others, that this is an action for unliquidated damages for breach of contract, to which *United States* v. *Carlo Bianchi & Co.*, 373 U.S. 709 (1963), is wholly inapplicable. The motion was denied by a single judge. Considering the point as raised anew in the course of the presentation of the case on the merits, we deny it, again, on the ground that defendant waived any right it may have had to an administrative determination of the facts by failing to make the point until too late a stage in the proceedings. *Commerce Int'l Co., Inc.* v. *United States*, Ct. Cl., No. 287–55, decided this day; *Wingate Constr. Co.* v. *United States*, Ct Cl., No. 394–60, decided Jan. 24, 1964, slip op., p. 7; *WPC Enterprises Inc.* v. *United States*, Ct. Cl., No. 256–59, decided Oct. 11, 1963, slip op., pp. 6–7, 323 F. 2d 874–878; *Stein Bros. Mfg. Co.* v. *United States*, Ct. Cl., No. 389–59, decided July 12, 1963, slip op., pp. 2–4.

which was needed to manufacture the shells in due time. We can also assume, likewise without deciding, that the request for plunge grinders equaled one for lathes.

The hurdle we cannot overcome is that in this case the discussion and decision on turning equipment (*i.e.*, plunge grinders) all took place before the parties were legally bound. When the plaintiff proposed, and the defendant rejected, the inclusion of grinders in the schedule of equipment to be financed by the Government for the production of the shells, the parties were acting under two temporary letter contracts—one for the supply of the shells and one for the facilities and equipment. These were preliminary contracts contemplating agreement upon, and execution of, two formal contracts (supply and facilities) before substantial production was to be started. But the letter contracts also envisaged that the parties might not be able to concur in the terms of the formal agreements; both letters provided that if agreement could not be reached on the formal contracts within 120 days from the date of the letter contracts (June 4, 1953), or a further date which was mutually agreeable, the letter contracts would terminate and the plaintiff would be paid for its expenditures-to-date-of-termination under the termination clauses incorporated in those documents. It is also quite clear from the letter contract on facilities that the parties had not yet come together on any specific items; the only agreements in that area were the general ones that "facilities shall be capable of producing a quantity of 360,000 shell on a one (1) shift, eight (8) hour, five (5) day week basis,"[3] and that the standard-form Ordnance contract for facilities would be used. Obviously, the plaintiff was to prepare and proffer a list of items which would, if agreeable to the defendant, be incorporated in the formal contract. The plaintiff, not the Government, was to be the source and initiator of the suggestions. Its actions under the letter contracts show that it thoroughly understood this procedure.

[3] Plaintiff sees this general clause as a guarantee by the Government that, whatever the facilities subsequently incorporated in the final contract, the contractor would be able to perform effectively. We read the clause as a general indication to plaintiff to propose facilities designed to achieve that goal, and in no sense as a warranty by the *defendant* as to the adequacy of the facilities (as yet undecided) for which it would ultimately pay.

When Ordnance and the plaintiff discussed, in the fall of 1953, the inclusion of plunge grinders, the letter contracts were still extant (they had been extended to December 4th) and formal contracts had not yet been consummated. One of the prime reasons for the meetings was to decide, if possible, what equipment and facilities should be covered by the formal facilities contract. On this record there is no reason to doubt that the parties discussed the matter of plunge grinders in utmost good faith. The hot cup-cold draw process was new and the defendant's expertise was certainly no greater than the plaintiff's (and probably less); there were no decisive indications that the questioned equipment should or should not be included; at most the choice lay in the area of legitimate doubt. Both parties had the full legal right to stand on their positions and thus to end the negotiations. The contractor was free to insist on plunge grinders (or other turning equipment) and the defendant was equally free to maintain that they should not be listed. In the event of an impasse the whole project would be terminated and plaintiff would receive its costs to date.

Plaintiff did not take this road. Instead, it acquiesced in the Ordnance position and presented a schedule omitting plunge grinders and proposing a new fixed-price. This written presentation did not refer to the grinders (or comparable machines) or intimate any concern over their absence. The plaintiff simply withdrew from its former position. Similarly, the formal contract did not list or refer to this (or like) equipment and did not even embody Ordnance's oral promise that it would authorize the purchase of the grinders if their use was shown to be necessary during performance.[4] The formal facilities contract said, quite precisely, that the Government desired to provide the property *listed in the schedules* to the contractor "for use in the production of 105 MM, M1 Shell by a combination hot forge and cold draw process at the rate of 360,000 per month on a one-shift, eight-hour five-day week basis." Only the specified items were to be provided; there was no undertaking at all as to any other pieces of equipment.

[4] In contrast, the formal supply contract included a caveat, which the parties had earlier discussed, as to the price of steel.

In these circumstances we cannot find any warranty or representation by the Government, express or implied, as to plunge grinders or turning equipment.[5] Before the contract was made, the plaintiff understood that the defendant, for better or worse, would not then countenance the acquisition of these items. Nevertheless the plaintiff went ahead to complete and execute the bargain. The situation was not materially different from pre-contract negotiations in which the participants haggle over equipment to be financed or furnished by the Government for a new procurement. In the absence of overriding special knowledge on the part of the defendant (*cf. Helene Curtis Industries, Inc.* v. *United States*, Ct. Cl., No. 251–56, decided Feb. 6, 1963, 312 F. 2d 774) or some explicit clause later inserted in the contract, the defendant's refusal to agree to the plaintiff's introductory request is not a warranty or a representation that the contract can be effectively performed on the Government's terms, any more than the defendant's insistence in negotiation on a certain price is a warranty or representation that the contractor will be able to make a profit at that price. Negotiation still involves bargaining, and the would-be contractor's concession to a Government position is not transmuted into reliance-on-a-representation every time the contractor guessed wrongly in making the concession.[6] On the plaintiff's argument, the full risk will always rest on the defendant—even though the parties do not consciously agree to put

[5] We have already indicated, *supra*, fn. 1, that the evidence does not support the contention that there was a specific oral warranty.

[6] Where the Government orders an item to be manufactured, or a structure built, according to certain specifications, it will usually be held, nothing else appearing, that the defendant implicitly represented that, if the specifications were complied with, satisfactory performance would result. See, *e.g.*, *R. M. Hollingshead Corp.* v. *United States*, 124 Ct. Cl. 681, 111 F. Supp. 285 (1953). This rule rests on the presumed expertise of the Government where it sees fit to prescribe detailed specifications. But this court has also pointed out that "if the manufacturer knows, or, perhaps, from his experience should know, that the desired article cannot be made from the specified materials, he has no right to make a useless thing and charge the customer for it." *Ibid* at 683, 111 F. Supp. at 286. Even for Government specifications, the rule may be different where the defendant has no special knowledge of the process of manufacture and the subject is brought into the open before the contract is made. *Cf. Beacon Constr. Co.* v. *United States*, Ct. Cl., No. 44–58, decided March 6, 1963, 314 F. 2d 501, and *WPC Enterprises, Inc.* v. *United States*, Ct. Cl., No. 256–59, decided Oct. 11, 1963, slip op., pp. 4–5, 323 F. 2d 874, 876–77. In any event, the government-specification rule has no application where, as here, the contractor is the source of the proposal, and the defendant's role is merely to approve or disapprove.

it there and the Government's knowledge is no greater than the contractor's. If the disputed equipment turns out to be unneeded but the contracting officer has acceded to the contractor's demand, the Government will expend its funds for no purpose and normally without any recourse against the contractor; if, however, the Government refuses and the item then proves unnecessary, no harm comes to the contractor. On the other hand, where the equipment is actually required, plaintiff would make the Government always bear the resulting costs, either under the contract if it concedes the contractor's request or in court if it refuses. Unless the parties have affirmatively done so, such a one-sided post-contract assignment of risks disclosed before final agreement is foreclosed by the theory of the fixed-price contract.[7] The entire burden cannot thus be cast on the Government.

The result is no different if we reject plaintiff's version and assume that the discussion of plunge grinders had nothing to do with the need for the lathe-like turning equipment which was ultimately revealed. In that event the parties would have entered into the formal agreements without bringing into the open the question of turning equipment. But, for the reasons given above, the defendant would still not have warranted or guaranteed the adequacy of the items of equipment on which agreement was reached. There were no express warranties. The Government did not prepare the list, have the greater knowledge, or make the studies. The process was novel. Accordingly, the Government's representatives were in no position to, and did not, assure plaintiff that the list plaintiff proposed would be sufficient. There may have been a mutual mistake, but there was no undertaking, explicit or implied, by defendant to assume all the risks that the agreed-upon items would effectively produce the shells.

The principles and decisions on which plaintiff relies are inapposite. In *Ekco Products Co.* v. *United States*, Ct. Cl., No. 464–57, decided Jan. 11, 1963, 312 F. 2d 768, the court

[7] It is noteworthy that plaintiff did not make its final price proposal until after the discussion as to plunge grinders. It may very well be that, in calculating that price, plaintiff took some account of the defendant's refusal to authorize plunge grinders. Moreover, when plaintiff agreed, in June 1954 (on reinstatement of the supply contract), to a fixed price of $5.2499 it knew that turning equipment had not been authorized.

held that, since the formal contract specified that head turners were to be furnished by the Government, adequate machines were impliedly warranted under the usual rules of bailment. There were no pre-contract negotiations negativing such an implied warranty; in addition, the court expressly held that because of the protective coating on the machines the contractor's inspection, made before the contract was executed, enabled its representatives to determine very little, if anything, about the turners (slip op., pp. 6–7). *Ekco* deals with property furnished by the Government to a contractor; the decision does not treat with a claim of implied warranty where the disputed equipment was omitted from the final contract and the parties' negotiations fail to suggest any promise by the defendant to guarantee performance. *Dayton-Wright Co.* v. *United States*, 64 Ct. Cl. 544 (1928), is likewise far afield. The suit was not for damages over and above the contract price but solely for the contract price; recovery was allowed because the defendant, *after* the contract was made on the basis of the contractor's own design and specifications, so changed the conception embodied in the contract that it was impossible for the plaintiff to meet the performance requirements. The present case differs sharply, among other things, in that the "imposition of defendant's mistaken judgment"—of which plaintiff now complains but in which it originally acquiesced—occurred prior to the making of the contract, not after.

II

Having rejected plaintiff's claim of a breach of contract, we come, now, to the more difficult phase of the case—can there be any sort of recovery here, premised on a mutual mistake? Except where the parties have failed to conform the written instrument to their actual understanding (*e.g.*, *Sutcliffe Storage & Warehouse Co.* v. *United States*, 125 Ct. Cl. 297, 112 F. Supp. 590 (1953); *Jones & Sears, Inc.* v. *United States*, 158 Ct. Cl. 162, 172–73 (1962)), the courts generally, as well as this court, have been wary in granting relief from innocent mutual mistakes imbedded in, or under-

lying, consummated contracts.[8] With this tacit warning, we must tread carefully since there was no mistake in the written formulation of the understanding here; the formal contract embodied the actual agreement as the parties thought it to be. But we feel impelled, nevertheless, to consider the problem of mistake because, in our view, there was a definite mutual mistake as to a very material fact—an innocent mistake which apparently led the contractor, without fault, to a large loss.[9] It is proper to decide whether, in these circumstances, any relief is open to plaintiff under the law we administer or whether the loss must simply rest where it dropped.

The mutual mistake was this: It was important to the Government to create stand-by facilities using the hot cup-cold draw method of making shells. Both parties hoped to make the shells under this process without any turning equipment, so as to diminish the wastage of steel to the greatest extent possible. Plaintiff's trials over a considerable period demonstrated, however, that this new method could not efficiently be used for mass production without one turning step at which some excess steel was removed from the shell. The main objective of the new method was to save much of the scrap steel resulting from the conventional hot forge process. That end was still reached, but not as completely as initially expected. Much steel was saved, but less than hoped. Some turning was still necessary. This critical fact the Government certainly did not know at the time of the negotiations and the execution of the contracts with plaintiff.[10] The defendant was unaware, also, that it would take much time and effort to discover the truth.

The plaintiff had premonitions that some sort of turning *might* be required, but it, too, did not *know* of the necessity of a shaving step; more particularly, plaintiff had no idea

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[8] See 3 Corbin, *Contracts* (1960 ed.), § 597 et. seq.: Note, "The Application of Common-Law Contract Principles in the Court of Claims: 1930 to Present," 49 Va. L. Rev. 772, 789–95 (1963): Doke, *Mistakes in Government Contracts—Error Detection Duty of Contracting Officer*, 15 Sw. L.J. 1 (1964), esp. at pp. 40–43.

[9] We qualify the statement by "apparently" since it has not yet been decided how much of the claimed loss was attributable to the mistake.

[10] A smaller one-line plant, which did not use a turning step, had previously made shells for the Government by the new process.

that it would be hard to determine this need. We are convinced from the record that, when plaintiff signed the formal contracts, it did not enter the arrangement with the feeling that it would fail, or encounter grave difficulty, because of the lack of turning equipment. It expected to succeed. Even assuming that the request for plunge grinders was equivalent to a request for a mechanism performing as the lathes later did—an assumption defendant challenges [11]—plaintiff's conduct shows that for quite a while it thought and hoped that, though it would be good to have turning equipment, the process could function effectively without such devices. Plaintiff accepted defendant's refusal to include plunge grinders, though the negotiations could have been ended right there. Plaintiff then proceeded well along on that basis, without referring again to turning equipment. In October 1955, after the first run of shells at Eau Claire, plaintiff's director of engineering gave a public address mentioning the absence of a turning step and suggesting the success of plaintiff's use of the hot cup-cold draw process. The difficulties came later when production was increased. Even then, it was not until prolonged efforts to operate properly at Eau Claire without a turning step, together with some experimentation with a lathe imported from Menomonie, that plaintiff (as well as defendant) finally determined that additional equipment was needed for steel removal after the hot forging phase of the new process. In arguing that the defendant should be held liable for a breach because it was warned of the need for turning equipment, plaintiff has over-stressed its own knowledge during the pre-contract stage. The truth, as we see it, is that neither side had the knowledge plaintiff now attributes to itself; plaintiff wanted the plunge grinders for insurance but both parties were under the misapprehension that, given proper engineering, the new process could be utilized without any turning step. Before us, defendant still argues that lathes only became necessary because of plaintiff's faulty design of the dies, but we conclude, from the history of the contract as well as defendant's own ultimate support of the lathes, that

[11] On defendant's view that plunge grinders were irrelevant to the turning problems later encountered in performance, there is a stronger case for finding that plaintiff (as well as defendant) was mistaken.

the parties were right when they ultimately decided that the process would not work properly for mass production without turning equipment.[12] In short, the parties reasonably labored, for most of the contract period, under a mutual mistake as to a most material set of facts. And that mistake was not understood until the plaintiff had tried, with defendant's approval, for quite a while—and apparently with the expenditure of considerable money—to make the shells without turning equipment.

Thus, the parties' arrangement was infused throughout, on both sides, with mutual ignorance of two essential facts—the need for turning equipment; the time and work required to establish that need—but the products of that mutual ignorance now weigh wholly upon the contractor. The defendant has paid the contract price and received its shells. The plaintiff has received the contract price but is left with a large loss which (we assume for present purposes) is due to the common error. This is not a case in which one party merely seeks to be excused (usually through rescission) from failing to perform because of a mutual mistake. This is a case where a party which has received the stated consideration asks for greater compensation, over and above the contract price, because of the mistake.

The courts have thus far chosen, in passing upon claims of the latter type, to hug closely the notched coastlines of the particular litigations,[13] rather than to chart straight paths across the troubled sea. As we have noted, it is difficult to find general principles or a developed body of law. This caution, which we accept, follows the wisdom of the common law; premature generalization can bear strange fruit. Nevertheless, there are some existing guidelines which we can usefully follow.

In denying a claim for increased compensation tied to a mutual mistake, we recently pointed out that "a mutual mistake as to a fact or factor, even a material one, will not support relief if the contract puts the risk of such a mistake

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[12] Other lines using the new process employ turning equipment. The smaller plant which had not used such machines (see fn. 10, *supra*) did not engage in speedy mass production.

[13] *Cf.* 3 Corbin, *Contracts* (1960 ed.), § 598; *Virginia Engineering Co.* v. *United States*, 101 Ct. Cl. 516, 532–33 (1944); *Peter Kiewit Sons' Co.* v. *United States*, 109 Ct. Cl. 517, 522–23, 74 F. Supp. 165, 168 (1947).

on the party asking reformation * * * * or normally if the other party, though made aware of the correct facts, would not have agreed at the outset to the change now sought * * *." *Flippin Materials Co.* v. *United States*, Ct. Cl., No. 8–57, decided Jan. 11, 1963, slip op., p. 11, 312 F. 2d 408, 415. The contractor in *Flippin* fell before both of those obstacles. Here, we are impelled to find that plaintiff is able to surmount both, perhaps not in Olympic fashion but well enough.

Did plaintiff assume the whole risk? In the first part of this opinion we considered whether the Government, under the contract, should bear the entire risk of the error as to turning equipment. We decided that it should not. The main problem in this second facet of the case is whether the contract placed that whole risk on the plaintiff. The answer is not easy, but we conclude that neither the written contract nor the course of dealings requires that plaintiff alone bear the full consequences of the parties' mutual error as to the need for turning equipment. The contract contained no disclaimers of Government liability or warranties by the plaintiff. As we see it, this was a new and joint enterprise in which neither party had any real expertise or background. The hot cup-cold draw process was novel and the results could not be predicted accurately. The Government was interested not only in the end-product—shells—but just as much in the perfection of the new process. The plaintiff was to be the active partner; it would undertake the study and experimentation, then suggest the procedures to be used, and finally carry out the experiment. But this was not a performance contract; plaintiff was not an expert, promising to perform and taking the whole risk and anxiety of the project off the Government's shoulders.[14] Plaintiff was, rather, the more

[14] In *The Austin Co.* v. *United States*, Ct. Cl., No. 177–61, decided March 6, 1963, 314 F. 2d 518, *cert. denied*, 375 U.S. 830, the contractor deliberately rejected the defendant's specifications as unworkable, substituted its own proposal, and assured the defendant that a contract based on its specifications could be performed and would result in a device of greater precision than called for by the defendant's original plans. In these circumstances the court held that the contractor entered into the arrangement with its eyes open and fully assumed the risks of impossibility of performance. In *Carnegie Steel Co.* v. *United States*, 240 U.S. 156 (1916), the contractor was a well-known steel firm undertaking to make a certain form of steel plate; in the circumstances the Court did not view the undertaking as tentative or experimental but as a performance contract in which the expertise was with the plaintiff.

active of a pair of gropers attempting to develop a new and largely untried process which was still far from mature. Possibly, in Professor Corbin's phrase, plaintiff may have bet that turning equipment would not be needed, but we do not think it bet as to the time and effort which would be necessary to determine that fact. The crucial error was as to the work necessary to show the need for turning equipment. On that point, there was no consideration and no discussion; both sides seemed to believe that such a need would be speedily shown or disproved. There is insufficient ground in the parties' negotiations, or in the transaction as a whole, for saying that the plaintiff, alone, assumed the risk that the period of proof would be long and arduous, costing the large sums it did.

Plaintiff's acceptance of a fixed-price contract, instead of some form of cost-plus arrangement or research-and-development contract, could suggest the allocation to it of all uncovered risks. But in this case that solution would be too facile for a risk connected so directly with the equipment to be used. Since the Government was to pay for the machines,[15] in the area of equipment the agreement was at least as close to a cost contract as to a fixed-price one. Moreover, even if the fixed-price covered the costs of a short period of testing to decide whether turning equipment was needed, it is hard to hold that it also covered a long period entailing very large expenses.[16] It should not be said, in all the circumstances, that the agreed fixed-price included the full risk that the contract could not be effectively performed without turning equipment. Our best judgment is that the specific risk as to the cost of proving that fact was not distributed, explicitly or implicitly, by the arrangement the parties made. The defendant did not assume that hazard, but neither did the plaintiff.

The second prerequisite to recovery for mutual mistake mentioned in *Flippin* is that the other party, if made aware

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[15] Including (as it turned out) the cost of the turning equipment itself.

[16] Plaintiff received some $980,000 for the 180,000 shells produced at Fau Claire by the new method, and lost some $750,000 in that phase of its production. Although we do not yet know the precise part of this loss attributable to the problem of turning equipment (see *infra*), it seems probable that the cost of testing the need for, and then using, turning equipment was very large in comparison to the plaintiff's revenue from its sale of the shells to the Government.

of the true facts, "would have agreed at the outset to the change now sought." This factor should be examined so as to avoid imposing, through reformation, an arrangement wholly alien to the parties' desires and basic plan. If the actual facts were known, to what would the Government have consented here?[17] Plainly it would have agreed to pay for turning equipment[18]—but that does not help us now since the defendant has already paid for the lathes. The sticking point is the responsibility for the costs of determining that turning equipment was essential. To deal justly with the error in this case, we have to presuppose that, during the negotiations, the parties recognized that it might well take much time and expense to decide whether or not turning equipment had to be used. In that event the defendant might have agreed to bear all of this cost, to bear none of it, or to share it with the contractor. Perhaps defendant's officials would have refused to incur any of this expense, but we think not since the Government was anxious to establish a production line for the new process which would omit turning equipment. The proving-out of this point would be for the Government's benefit; defendant would therefore be willing to participate in discovering whether the ideal goal could be attained and in making sure that the original aim of a production line without turning equipment was beyond reach. Plainly, the fixed-price proffered by plaintiff after the elimination of the plunge grinders did not contain a contingency allowance adequate for a lengthy period of trial and error; if that happened, the contractor would suffer a grave set-back. The defendant would not, we think, have insisted on taking the whole of such a toll.[19] Perhaps, on the other hand, defendant would have consented to carry, as an extra, all of the cost of a protracted testing period—but again we think not. The Government would

[17] This presupposes that the plaintiff did not assume the risk of the mistake.

[18] The defendant's chief representative did agree, orally, during the pre-contract negotiations to pay for plunge grinders if they proved necessary.

[19] In this case we need not be concerned with other bidders or would-be contractors to which the defendant might have turned. There is no reason to believe that, after Ordnance decided to change this procurement to the new method, there were any other firms under consideration. By the time of the switch to the hot cup-cold draw process (at the end of June 1953), the parties had already entered into the letter contracts (on June 4, 1953), and there is no indication that defendant would have dealt with any other manufacturer.

have thought, as we do, that *some* allowance for this expense was already included in the fixed-price. The defendant would also have wanted to be certain that the testing period was as short, economical, and efficient as possible, and that at the close of the tests plaintiff used the turning devices promptly and effectively. A promise of full reimbursement for all expenses actually incurred would dampen the stimulus to keep the testing efficient and the costs low. In sum, we think that Ordnance would have been willing to bear part, but not all, of the actual testing (and consequent) expenses.

Flippin does not say that, if the two prerequisites we have just discussed are fulfilled, then relief for a mutual mistake follows as of course. These are necessary conditions but they may not be sufficient. The argument can be advanced that relief for a mutual mistake, through additional compensation to the contractor, should be left to legislation or administrative discretion.[20] We think, however, that the federal courts can and should proceed under the Tucker Act, now as in the past, to develop and establish just and practical principles of contract law for the Federal Government. Judicial reformation for mutual-mistake-of-fact is not new (see fns. 8 and 13, *supra*, and *cf. Harrison Engr. & Constr. Corp.* v. *United States*, 107 Ct. Cl. 205, 208, 68 F. Supp. 350, 351–352 (1946)); and though the particular result here may be unprecedented that is, of course, the way of the common law. Then it may be said that to grant compensatory relief where neither side assumed the specific risk departs too far from the parties' actual understanding; it may be better to let the chips lie where they fall. *Cf.* 3 Corbin, *Contracts* (1960 ed.), § 598, p. 589; 5 Williston, *Contracts* (rev. ed., 1937), § 1548, pp. 4339, 4341. But it is unsatisfactory to tell a party

[20] For most of the time since the early days of World War II, the main defense agencies have been authorized, under Congressional enactments and Executive Orders, to grant discretionary relief to many contractors suffering losses on account of mistakes. Title II, Section 201, of the First War Powers Act, 55 Stat. 838 (1941); Executive Order No. 9001, 6 F.R. 6787 (1941); Act of Jan. 12, 1951, 64 Stat. 1257; Public Law 85–804, 72 Stat. 972, 50 U.S.C. §§ 1431–35 (1958). See Rowley, "The First War Powers Act Cases," in Shepherd, *Cases and Materials on the Law of Contracts* (2d ed. 1946), pp. 1233–1261; Fain and Watt, *War Procurement—A New Pattern in Contracts*, 44 Col. L. Rev. 127, 194–206 (1944); Kramer, *Extraordinary Relief for War Contractors*, 93 U. of Pa. L. Rev. 357 (1945); *Correction of Mistakes in Contracts Under Public Law 85–804*, Government Contracts Monograph No. 1 (The George Washington Univ.) (1961).

who did not, either in terms or by fair implication, assume a certain heavy risk that he *alone* must bear it simply because of the happenstance that it fell to his lot. Particularly is this so where, as here, the unexpected occurrence led to a period of extra work which was not useless to the other party.[21] It is at least equally logical and decidedly more just to divide the cost between the two parties, neither of whom can be properly charged with the whole. We are rightly admonished, in the region of mutual mistake, to seek just solutions. See 3 Corbin, *supra*, § 597, p. 583, esp. fn. 6, § 605, pp. 640–42, esp. fns. 94–95. By the same token we need not be stopped short by the fear of opening Pandora's box. To do justice here we need go no further than formulate and apply a rule for cases of mutual mistake in which the contract, properly construed, allocates the specific risk to neither party [22]—and the side from whom relief is sought received a benefit from the extra work of the type it contemplated obtaining from the contract, and would have been willing, if it had known the true facts from the beginning, to bear a substantial part of the additional expenses. *Cf. Virginia Engr. Co.* v. *United States*, 101 Ct. Cl. 516, 532–33 (1944).

For such a case it is equitable to reform the contract so that

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[21] Through this prolonged period of trial and error the Government learned that it could not effectively mass-produce shells by the hot cup-cold draw method without turning equipment. This was a fact the defendant wanted to discover under this contract, not an extraneous benefit.

We do not believe that plaintiff has forfeited all right to relief because it did not stop during the testing period—once it knew that its costs were mounting—and seek a price adjustment. At each step of the testing it may have believed that the final solution was near, and manufacture of the shells would then proceed without interruption. *Cf. Ekco Products Co.* v. *United States*, Ct. Cl., No. 464–57, decided January 11, 1963, slip op., p. 8. In any event, if the defendant had refused an increase (as is likely at that stage) the plaintiff would then have been put to the unduly harsh choice of (1) stopping performance and risking all the consequences of a notice of default-termination, or (2) continuing performance after the defendant's explicit refusal to pay anything extra under a contract which (as it stood) did not require such payment. The Government, on the other hand, did not suffer materially (under our disposition of the case) by the plaintiff's failure to ask for an increase during performance. The Government has obtained proof that turning equipment was necessary, but it is not called upon to pay all the costs of that proof. If the contract had been terminated during the testing period, defendant either would have had to hire someone else to discover whether turning was essential or given up finding an answer to that question. As Part II of our opinion implies, the defendant would not have been able to obtain reimbursement from the plaintiff if the contract had been terminated for default.

[22] In turn, as indicated above, we base our holding that the contract here did not assign the risk to plaintiff on the particular facts of this case, especially the novel and experimental character of the project and the seriousness of the unexpected costs in relation to the contract price.

each side bears a share of the unexpected costs, instead of permitting the whole loss to remain with the party on whom it chanced to light. In contract suits courts have generally seemed loath to divide damages, but in this class of case we see no objection other than tradition. Reformation, as the child of equity, can mold its relief to attain any fair result within the broadest perimeter of the charter the parties have established for themselves.[23] Where that arrangement has allocated the risk to neither side, a judicial division is fair and equitable. The division can follow from the special circumstances if there are any; in their absence an equal split would fit the basic postulate that the contract has assigned the risk to neither party.

In the present instance it might theoretically be possible to calculate (i) the cost of the most economical and efficient process of testing whether turning equipment was necessary for mass production and then of using the lathes once they were found essential[24], and (ii) the contingency allowance (for such testing and use of turning equipment) included in the fixed price—and then to charge the defendant with the first less the second. But these refined figures seem to us overly difficult to discover and prove. There are no ready-made gauges of efficient testing in such an untried field; and at this time the plaintiff's allowance for this possibility might be quite unfathomable. Moreover, we are not sure that the defendant should be saddled with all the additional costs, even as pared to the bone. We consider it more practical, but nevertheless fair, to halve the loss and hold defendant responsible for an equal portion.

The Trial Commissioner has found the loss plaintiff suffered in making the shells at Eau Claire, but he has not determined whether and to what extent that loss is attributable to (a) the costs of testing to see whether turning equipment was required and (b) the extra costs of manufacturing

[23] Corbin refers to "the extent of judicial power and the flexibility of equitable remedies" in the law of mistake. 3 Corbin, *supra*, § 597, p. 583, fn. 6.

[24] Although defendant approved plaintiff's lengthy course of trial and error in determining whether turning equipment was essential, it is not fair to infer from the Government's approval that plaintiff must have used the most economical and efficient method of testing, and then of using the lathes. We can properly assume that defendant's representatives thought that plaintiff would bear the full cost of testing and manufacturing; from their viewpoint it would not matter whether the plaintiff's work was somewhat wasteful or unduly prolonged.

with the lathes. Also, the Commissioner has referred to other difficulties in production but has not indicated whether (and to what extent) these other problems contributed to the loss he h' .ound. From the materials available to us we cannot readily make these determinations. We therefore remand the case to the Commissioner to find what part of the total loss should be attributed to the mistake over the turning equipment. The plaintiff should recover one-half of the portion of the total loss so delimited.

Plaintiff is entitled to recover in accordance with this opinion, and judgment is entered to that effect. The amount of recovery will be determined under Rule 47(c)(2).

WHITAKER, *Senior Judge*, dissenting:

It cannot be denied that the result reached by the court in this case would be a fair and just one, *if the contract between the parties permitted it.*

The parties could have contracted between themselves that if the cost of doing this work turned out to be expensive beyond reasonable expectations, the parties should be equally charged with the excess. But this is not what they did. The plaintiff agreed to do the work for a fixed sum. There was no provision in the contract for the payment of any additional sum if the cost of doing the work turned out to be much greater than had been expected. Indeed, neither party knew how much work would have to be done to ascertain whether the cold-cup process would work without the use of a grinding machine, and yet the contractor agreed to do the necessary work for a fixed sum.

Furthermore, as the work progressed and costs mounted, the plaintiff never told defendant that its costs were far in excess of what it had anticipated, and never requested the Government to pay any part of the excess. No contractor can charge the Government with any part of unanticipated costs, except those coming within the "Changes" articles, where the contract provides that the plaintiff should do the work for a specified sum. To require the Government to pay an amount in addition to the stipulated sum, because the contractor incurred greater expense than he had anticipated, would leave the Government in a wholly untenable position, never knowing what a job was going to cost it, although the plaintiff had contracted to do it for a specific sum.

Many times when the Government asks a contractor to do an exploratory job, the cost of which is uncertain and which neither party can foresee, the parties enter into what are sometimes called research and development contracts, under which each party agrees to share in the cost of doing the work. That is what the parties probably should have done in this case, but they did not. The plaintiff undertook to do the work for a fixed sum, and, in my judgment, that is all it is entitled to recover. That is all the Government agreed to pay, and that is all the Government should pay. As a matter of generosity, the Government might well have agreed to pay the additional expense, but no court can require a person to be generous; it can only require him to be just.

Even a mutual mistake as to an antecedent or existing fact does not justify reformation of a contract (*Maryland Cas. Co.* v. *United States*, 169 F. 2d 102 and cases there cited), but, even if it did, I cannot see that there was any mutual mistake of fact in this case. The defendant did not know what it would cost plaintiff to do the work nor, I suppose, did plaintiff, although plaintiff thought it knew when it agreed to do the work for a fixed sum. Plaintiff was mistaken, but the mistake was only plaintiff's and not that of the defendant. There was no *mutual* mistake of fact. When plaintiff agreed on a fixed price, it assumed the risk of doing the work for this sum; defendant did not agree to share the risk. Even if contracts could be reformed for a mistake about a fact supposed to exist or to have existed at the time the contract was agreed upon, they certainly cannot be reformed because the parties could not accurately foretell the future.

I sympathize with the plaintiff, but it made a contract and it is entitled to recover only according to that contract. I regret to dissent, but I must.

FINDINGS OF FACT

The court, having considered the evidence, the report of Trial Commissioner William E. Day, and the briefs and argument of counsel, makes findings of fact as follows:

1. Plaintiff is a corporation, organized and existing under the laws of the State of Wisconsin, with its principal

office and place of business at Eau Claire, Wisconsin, where it had two manufacturing plants during all times material herein. It also had a factory at Menomonie, Wisconsin. Plaintiff was formerly known as National Pressure Cooker Company, but changed its corporate name to National Presto Industries, Inc., in late 1953 or early 1954.

2. Plaintiff has for many years been engaged in the manufacture of pressure cookers and small appliances. During World War II, it shifted to the production of war materials and has continued to perform a substantial amount of contract work for the armed services, including an important contract for the manufacture of 90-millimeter steel cartridge cases. At the time the contracts in suit were negotiated, plaintiff was an experienced manufacturer of shells.

3. During the latter stages of the Korean war, the Department of the Army, acting through its Ordnance Corps, wished to expand existing capacity, then available to it through various commercial firms, for the production of 105-millimeter artillery shells. Toward this end, the Chicago Ordnance District was requested to canvass the commercial facilities within the District to ascertain the names of those companies which were capable of and interested in producing such shells in large quantities.

4. The plaintiff was, along with other firms, requested to submit a proposal.

5. A written preliminary proposal was submitted to the Chicago Ordnance District by the plaintiff on December 11, 1952.

6. Thereafter, the Ordnance Ammunition Center at Joliet, Illinois, gave more specific information to the Chicago Ordnance District as to the defendant's shell requirements, which was transmitted to the plaintiff in the following terms:

ESTABLISHMENT OF ADDITIONAL CAPACITY SHELL, HE, M1, MPTS 105 MM

1. In order to accomplish this procurement, it is necessary that information as to the availability of facilities and the approximate costs of establishing these facilities be made available to this office. It is, therefore, requested that your District survey all facilities within your area, which you feel are capable and interested in producing this Shell.

2. This requirement should be based on the establishment of seven (7) lines, each capable of producing 60,000 shell per month on a one-shift, eight (8) hour day, five (5) day week shift basis, or a total output of 420,000 units per month. The lines are to be completely integrated (i.e.) forging and machining capacity will balance. The facilities should also be available for 100% standby for a period of at least 5 years.

3. It is the desire of the Government to have as many of these lines in one plant as possible, with the ideal facility housing their entire seven (7) lines.

4. For the purpose of negotiation you are advised that there will be made available sufficient requirement to sustain these lines for at least six (6) months of production with probable continuity available thereafter. The target date for initiation of production is presently established February 1954.

5. It is therefore requested that your District take immediate action to obtain and submit to this Center not later than 29 December 1952, the following information:

a. The name and address of the facilities capable and interested in producing this shell.
b. In each case the best estimate of a unit price.
c. The best estimate of a schedule (A) equipment cost.
d. The best estimate of the schedule (C) plant rehabilitation cost.

7. The plaintiff, on December 22, 1952, sent a letter to the Chief, Chicago Ordnance District, which reads as follows:

In accordance with your request of December 15th, 1952, we are submitting herewith our proposal for the establishment, operation and maintenance of a new facility for the production of M1 105MM HE Shells in our Presto plant at Eau Claire, Wisconsin.

We understand that the Ordnance Department wants this new facility capable of producing 420,000 of the subject shells per month on a one-shift, eight-hour day, five-days-per-week basis. We further understand that the lines are to be completely integrated (i.e., forging and machining capacity to balance) and that the facilities must be available for 100% stand-by for a period of at least five years.

The herewith-submitted preliminary proposal is based on the above requirements.

In view of our diversified experience in setting up ammunition component production lines and in operating these lines on a mass production and economical basis, we feel particularly qualified:

1. To establish in our PRESTO plant the subject 105 MM line;
2. To operate this line on an economical basis; and
3. To maintain the line in a stand-by condition at such time as the Ordnance Department's requirements dictate that it be placed in stand-by.

For purposes of clarity, our preliminary proposal for the establishment, operation, and maintenance of the subject line is broken down as follows:

ESTABLISHMENT AND INSTALLATION OF LINE

We will agree to purchase the necessary machines and facilities for Government account, and to install these machines and facilities on a cost reimbursable basis with no fixed fee. On the basis of our preliminary Schedule "A",[25] a copy of which is enclosed herewith, it appears that the entire line can be established for a cost of approximately $14,817,691.40. As you know, we have just completed installing a M1 105MM Shell line in our plant at Menomonie, Wisconsin, and hence are completely conversant with all details and ramifications of establishing such a line, as well as completely familiar with the best equipment to be included therein.

Our PRESTO plant is so close to ideal for establishment of the subject line, that a minimum in the way of plant rehabilitation will be required for establishment of the line. We are enclosing herewith our preliminary Schedule "C",[26] from which you will note that we anticipate spending only approximately $45,000.00 to make the necessary plant rehabilitation and plant rearrangement.

OPERATION

We contemplate having the line ready for production by February, 1954, per your instructions. Once the line has been established, we will operate it in accordance with your requirements as outlined in the second paragraph of this letter, and for such period of time as the Ordnance Department deems necessary. We are agreeable to handling the production phase on a negotiated price-per-unit basis. On the basis of our present estimates, and on the assumption that we will be instructed to produce 420,000 shells per month on a one-shift basis, it appears that we can produce these shells at $5.15 per shell, with the understanding, of course,

[25] Schedule "A," referred to in plaintiff's letter, was not placed in evidence.
[26] Schedule "C," referred to in plaintiff's letter, was not placed in evidence.

that there will be the usual 10% upward, and unlimited downward, revision applicable.

Maintenance of Plant and Stand-By

At such time as the Ordnance Department requirements dictate that the subject line be placed in a stand-by condition, we will be happy to maintain it in such condition for a minimum period of five years. However, should the Ordnance Department so desire, *we will be happy to maintain it in a stand-by condition for an indefinite period over and above the original five years.* Our present estimates indicate that the most of maintaining the subject line in stand-by for the Ordnance Department will total about $200,000.00 per year. Based on the understanding that the stand-by will endure for a minimum period of five years, we are agreeable to handling such stand-by on a cost-reimbursable basis. In other words, we will be happy to work with the Ordnance Department on the portion of the contract with no profit or fixed fee to our organization.

There are a number of reasons why our Presto plant is ideally suited to meet the requirements of the Ordnance Department.

Security

Our Presto plant is ideally situated from a security point of view since it is located approximately 100 miles from the nearest large industrial area and about five miles from the small city of Eau Claire, Wisconsin.

Available Floor Space and Area for Expansion

Our Presto plant, which was used during World War II as a loading plant, has approximately 400,000 square feet of floor space, the bulk of which is housed in a series of buildings all under one roof and available for this project (see photograph attached).[27] There is almost unlimited room for plant expansion since we are located on a tract of land containing 300 acres, the great bulk of which could be used for the construction of additional buildings, if necessary.

Available Manpower

The City of Eau Claire is the hub of a large farming area and has at least a dozen small towns within a twenty-mile radius. This farming area and these inter-

[27] The photograph, referred to in plaintiff's letter, was not placed in evidence.

mittent small towns have a large labor reserve consisting of many trained employees who worked for us during the peak of World War II. Our payroll presently numbers approximately 2,000 and we could increase that number several fold, if necessary, from the available manpower reserve.

TRANSPORTATION FACILITIES

Notwithstanding the fact that our PRESTO plant is located in a relatively isolated area, the available transportation facilities are excellent. This plant is serviced by two major railroads, which have access to sidings at each end of our plant, and several major trucking lines all of which have access to our excellent loading and unloading docks. The plant is adjacent to an excellent highway and approximately one mile from the Municipal Airport. Suitable cargo and personnel air transportation is available from this airport.

SUMMARY

In view of our diversified experience in the establishment and operation of ammunition component mass production lines, and in view of the ideal location of our PRESTO plant from the standpoint of security, transportation facilities, available floor space and manpower, as well as opportunities for considerable expansion in floor space and manpower, we feel that we are particularly qualified to undertake the subject project for the Ordnance Department.

On the basis of the information and data submitted herewith, we sincerely trust that you will be in a position to award us a contract for the project at hand. Toward this end, we stand willing and able to commence the necessary negotiations with your office at such time as you deem proper and desirable.

With many thanks for your serious consideration of the hereinbefore outlined proposal, and kindest personal regards, I am

8. On January 28, 1953, a further request for a proposal was sent to the plaintiff by the Chicago Ordnance District (sometimes hereinafter referred to as "COD"), for the establishment of a 105-mm. shell line having a capacity of 360,000 shells per month on a one-shift, 8-hour day, 5-day week basis. This was replied to by the plaintiff on February 5th, by a letter similar to that quoted in finding 7, except that the rate

of production was based on the capability of producing 360,000 shells per month. The reply included a detailed listing of each specific item of equipment which the plaintiff intended to purchase and its cost, including delivery and installation.

9. Early in March 1953, a pre-award survey was made of the plaintiff company and another firm by officials of COD. The results of this survey were communicated to the Commanding General of the Ordnance Ammunition Center, Joliet, Illinois, by the District Chief, COD, on March 13, 1953, with the recommendation of that officer that placement of the contract be made with the plaintiff. The report of survey contained a statement that verbal information from the office of the Chief of Ordnance (Washington) to COD had been given that the method of shell manufacture was to be changed from the conventional hot forge method to a new method known as the hot cup-cold draw process. It is noted that the proposals which had theretofore been submitted by the plaintiff contemplated manufacture by the conventional process.

10. The plaintiff had earlier been awarded a contract for the establishment of a 105-mm. shell line at its Menomonie plant as well as a separate contract for shells. This was a single line of equipment to produce 40,000 shells per month, 8 hours per day, 5 days per week. Along with the contract for the establishment of the shell line on a cost reimbursable basis, a contract for the production of shells at Menomonie at a fixed price was also awarded to the plaintiff. These are referred to hereafter as Contract Nos. 917 and 918, respectively.

11. The "conventional" method for manufacturing 105-mm. shells, which had been in use for a great many years, was substantially as follows: Starting with either round steel bars or round cornered square steel bars, billets are cut to the desired length (which varies with different plants) and to weights ranging from 38 to 44 pounds. The billets are then heated to a temperature of about 2,000 degrees, then moved into a forging press where they are punched and pierced, and then they are drawn while hot to the required length of the shell by means of hydraulic presses. The shell is then sub-

jected to a rough turning process whereby excess material is removed from the exterior of the shell by lathes. The purpose of this rough turning operation is to make the shell concentric and to provide uniform wall thickness and roundness. The shell is then reheated to a temperature of from 1,300 to 1,600 degrees, then cooled, and excess material is again removed; certain finishing operations are performed and finally the shell is marked, painted, and prepared for shipment. The weight of the finished product is between 25 and 26 pounds before banding.

This method of making shells was in universal use until the end of World War II. It has the obvious advantage of being a tried and tested method of producing the shells successfully. It has certain disadvantages, however, some of which are readily apparent. One of the main disadvantages is in the tremendous waste of steel. Because of the turning operations which follow after the hot forging is completed, approximately one-third of the original weight of the billet goes to scrap. In time of war, the requirements for artillery shell steel represent the highest total tonnage requirements that are imposed upon the steel industry. In World War II, in excess of 600 carloads of steel a week were used in the manufacture of 150-mm. and 155-mm. shells.

Obviously, any method which brings about a reduction in this tremendous steel tonnage is in the public interest.

Another disadvantage of the conventional process is in the very large amount of floor space required for the operation of a shell line—approximately five times as much as is needed for a line operating under the hot cup-cold draw process. This, in turn, has an effect upon plant costs, maintenance costs, housekeeping, and the like.

12. The new method, which became known as the hot cup-cold draw process, had the immense advantage of saving steel. It accomplished this primarily by eliminating the necessity for reheating the billet after the initial punch and pierce. Thereafter, the billet was worked in its cold state. Early in 1952 a single line facility had been established at the Tokheim plant at Fort Wayne, Indiana, and by March 1953 Tokheim had produced a number of shells by the new process. At the Tokheim plant, a round billet, sawed to length, was heated in a salt-bath type equipment, then hot

forged in three press forming operations. After the initial hot forging, the billets were cooled and drawn to shape while cold, without any rough turning. The shells were then nosed and machined and finished as in the other process.

The conventional process required the leaving of about three-eighths of an inch of steel on the shell, which then had to be machined off by lathes in two operations—a rough turn and a finish turn. This resulted in a great deal of scrap. The main advantage of the hot cup-cold draw process was the saving of steel by eliminating the rough turning process.

At the Tokheim plant, the weight of the finished shell was just a little less than the weight of the starting billet, thus achieving the major objective of saving material and eliminating a substantial amount of scrap.

13. On June 4, 1953, the plaintiff and the defendant entered into two letter contracts, one for establishing the shell line and the other for the production of one million 105-mm. shells. Although there had been previous discussions between the parties as to the production of shells by both the conventional process and the hot cup-cold draw process, it was the understanding of the parties that the plaintiff would initially be given authority to procure items of equipment only where such items of equipment were the same for both processes. Both letter contracts contained a provision which reads as follows:

> You shall not make any expenditures, or commitments, issue any orders, subcontracts or incur any costs in furtherance of the performance of this Letter Contract without the prior written approval of the Contracting Officer.

Both letter contracts also provided:

> In the event of a termination of performance of the work or any part thereof under this letter by notice given pursuant to the Termination clause incorporated herein by reference, or in the event that the formal contract is not executed within the time specified in Exhibit "A", or any extension of such time as may be authorized in writing by the Contracting Officer, you shall be paid in accordance with the provisions of such Termination clause, except that no profit will be allowed if the Contracting Officer finds that you have delayed the execution

> of the formal contract for an unreasonable period; provided, however, that in no event shall the liability of the Government to you hereunder exceed the amount specified in Exhibit "A" or such other amount as may be authorized in writing by the Contracting Officer.

In each instance Exhibit "A", which was made part of the letter contracts, contained a clause providing:

> In case a formal contract is not executed within 120 days from the date of execution of this Letter Contract (or any subsequent date at any time mutually agreed upon), because of the inability of the Parties to agree upon a formal contract, this Letter Contract will terminate on the stated date or such subsequent date, as the case may be.

14. Discussions had been going on since about March 1953 between representatives of the plaintiff and the defendant as to the possibility of using the hot cup-cold draw process instead of the conventional process at the plaintiff's Eau Claire shell lines. On June 29, 1953, COD was authorized by higher authority to take action to establish the shell line in the plaintiff's plant using the hot cup-cold draw process.

15. Plaintiff's engineers had been made familiar, by visits to and discussions with officials (both Army and contractor) at the Tokheim plant, with the results Tokheim had achieved and the methods it used in producing 105-mm. shells by the hot cup-cold draw method. The multi-line facility was to be established in plaintiff's plant at Eau Claire and it was important to the Government as well as to the plaintiff that it be as efficient as possible. Ordnance did not expect plaintiff to duplicate the equipment or exact process in use at the Tokheim plant, and the plan proposed by plaintiff (and accepted by the defendant) made several significant changes from the Tokheim equipment and process. The hot cup-cold draw process was new and untried for mass production.

16. On July 7, 1953, the plaintiff was requested in writing to submit an up-to-date list of facilities and their costs for establishing the shell lines on the basis of the hot cup-cold draw method of manufacture.

17. The plaintiff, on July 28, 1953, sent the following letter to COD:

This is to acknowledge your letter, referenced above, in which you authorize us to proceed on a hot cup, cold draw manufacturing method to produce the subject Shell under Contract ORD-1316. This letter also requested that we submit a revised proposal on unit price as well as a new Schedule A covering the hot cup, cold draw method of manufacturing.

We wish to advise you at this time that we will have the new proposal on prices and the Schedule A to you by no later than the 15th of August. We would have been able to furnish this information sooner, however, since you have now asked us to include equipment which will also produce the 110MM Shell we find that it will take us slightly longer than anticipated to get the Schedule A to you. We wish to advise you, however, that we shall do everything possible to better the above date of August 15.

Should you have any questions relative to this matter please do not hesitate to call on us.

18. The plaintiff, on August 19, 1953, sent the following letter to COD:

Please refer to our letter referenced above in which we advised that we contemplated having a Schedule "A" and a new proposal on the price of the 105MM, M1 Shell available by August 15, 1953.

As indicated at a meeting held between members of the Chicago Ordnance District and National Presto Industries on August 13, we now find that we will not be able to supply you with the Schedule "A" and the new proposal on the price of the 105MM, M1 Shell until the week of September 14. This delay is occasioned by the fact that we have been unable to secure complete quotations from equipment vendors and organizations supplying us with services as was originally contemplated.

During the meeting referenced above, it was mutually decided that the Schedule "A" submitted should be complete and accurate. In order for us to attain the desired accuracy, we will need an additional extension on the subject letter contracts.

Your early attention to this matter will be greatly appreciated. However, should you have any questions relative to this matter, please do not hesitate to call on us.

19. Although there is testimony "pro" and "con" by the parties as to discussions held between responsible representatives of the parties regarding certain conversations

which took place prior to November 10, 1953, as to whether or not the plaintiff would require some type of stock removal equipment in the shell lines after the hot forging in order to make the shell concentric, there is no written record of any such discussion. In any event, the important discussion on this matter took place on that day.

20. On November 10, 1953, a meeting was held between representatives of the plaintiff and the contracting officer at Chicago Ordnance District. The plaintiff's project manager, Soper, told Colonel Haskell, commanding officer, Chicago Ordnance District and contracting officer, that he was of the opinion that there should be included in the shell lines 24 plunge grinders (4 to each line) at a cost of about $321,600. Plaintiff's representatives came to the meeting with two Schedule "As," one including the plunge grinders and another deleting them. After considerable discussion, Haskell told plaintiff's officers that he would not approve a Schedule "A" which included plunge grinders but would agree to authorize the grinders if their use were shown to be necessary during the course of performance.

S. A. Halpern, plaintiff's assistant to the president,[28] memorialized the aspects of the conference which were then considered important to the plaintiff in a memorandum to the files, which he dictated and initialed on November 11, 1953, and which reads as follows:

> The purpose of this memorandum is to confirm the results of a meeting held in Chicago Ordnance District on Tuesday, November 10th, in connection with our Schedule "A" on the above captioned contract. The Chicago Ordnance District was represented by Colonel Robert K. Haskell; Mr. J. H. Pratt, his assistant; and Mr. A. H. Sundfor, Project Engineer. National Presto Industries, Inc., was represented by Mr. L. E. Phillips, President; S. A. Halpern, his assistant; C. O. Dahl, Vice President in Charge of Manufacturing; and Vern Soper, Project Manager.
>
> At the above meeting we presented to the Chicago Ordnance District our Schedule "A" dated November 6, 1953, which included an item in the sum of $321,600.00 for 24 Plunge Grinders which we felt necessary for successful operation of the subject line. These Plunge

[28] Mr. Halpern is an attorney by profession.

Grinders, Item 14A in our November 8th Schedule "A", were to be used on Operation 145 in the subject production. After considerable discussion Colonel Haskell, of the Chicago Ordnance District, advised us that they would not permit us to include this item and requested that it be deleted from our Schedule "A". Colonel Haskell understood that there might be some element of gamble in so doing and assured us that the Chicago Ordnance District would assume the responsibility for omitting the Plunge Grinders and would see that we would be furnished these Plunge Grinders at some later date if experience dictated the necessity for them. In the meantime, Colonel Haskell agreed to include in our Definitive Contract a provision authorizing us a steel escalation in the event the particular type of steel we had chosen for the job was not adequate, by virtue of the fact that we are eliminating the operation normally performed by Plunge Grinders.

The rest of Schedule "A" was discussed and, while there was some question raised as to the quantity of saws we were requesting, Chicago Ordnance District advised that they would go along with our quantity until such time as we actually started to purchase this subject item.

The purpose of this memorandum is merely to make a record of the above mentioned meeting.

Plaintiff has not borne its burden of proving that Colonel Haskell said, at the meeting of November 10th, that Ordnance would assume the responsibility for the omission of plunge grinders or the consequences of that omission.

At the meeting of November 10th, both parties took their positions in good faith.

21. On November 14, 1953, the plaintiff, by Mr. Halpern, assistant to the president, submitted a detailed written proposal to COD for the establishment of facilities for the production of 105-mm. shells on the basis of a combination hot forge and cold draw process. Attached to this proposal was a Schedule "A" listing in detail the description of each operation and of equipment required to accomplish it together with the cost of machines as well as the cost of their installation, freight and tooling costs. This proposal except for the Schedule "A" reads as follows:

Subject: Letter Contracts DA-11-022-ORD-1316 and DA-11-022-ORD-1317, Covering Establishment of Facilities for Production of M1 and M60 105MM Shells.

Gentlemen:

Reference is made to our proposal of February 5, 1953, under which we proposed to establish a facility capable of producing 360,000 M1 105MM Shells per month on the basis of utilizing one-third of the overall capacity of the facility. This proposal, which contemplated the use of the convention[al] hot forge method of manufacture, culminated in your issuance to us on June 4, 1953 of Letters Contracts DA-11-022-ORD-1316 and DA-11-022-ORD-1317.

Based on subsequent discussions with your installation, as well as with the Ordnance Ammunition Center and the Office of the Chief of Ordnance, it was determined that we should make plans for producing the subject 105MM Shell on the basis of a combination hot forge and cold draw process. Accordingly, we are enclosing, in triplicate, our new Schedule "A" covering the production under the new process and we are herewith submitting our unit price, based on that process.

As appears on the enclosed Schedule "A", our facilities costs for establishing the subject 105MM Shell line are estimated at a total of $12,820,865.00. It should be noted here that equipment contained in the subject Schedule "A" is capable of producing the 110MM Shell with the understanding, however, that for us to produce 110MM Shells on this facility, we will require tooling and some equipment over and above that contained in this schedule. At your request, we have also included certain facilities necessary to enable one-third of the facility to manufacture M60 105MM chemical shells except for the production of adapters which we contemplate purchasing from outside sources. This latter addition, in the estimated sum of $373,976.00, accounts for the entire estimated facilities total of $13,194,841.00, as indicated in the enclosed Schedule "A".

In our February 5th proposal, based on the manufacture of approximately 2,000,000 of the subject shells on the conventional hot forge method, we made the following proposal:

A. Price per unit	$4.963
B. Production costs	125,000.00

The Letter Contract (DA-11-022-ORD-1316) issued pursuant to our February 5th proposal called for only 1,000,000 units at a total cost of $5,085,000.00 broken down as follows:

A. Price per 1,000,000 units (at price of $4.963 per unit)	$4,963,000.00
B. Preproduction costs	125,000.00
	5,088,000.00

On the assumption that there will be a large enough requirement of shells for us to commence and continue production on the entire facilities for a period of one year, and using the new hot forge and cold draw process, we will produce the subject item at a rate of 1,080,000 per month on a three eight-hour shift per day, five days per week operation on the following basis:

A. Price per 1,000,000 units (at average price of $4.30 per unit)	$4,300,000.00
B. Preproduction costs	125,000.00
	4,425,000.00

Using the new hot forge and cold draw process, on a one-third capacity basis, we will produce the subject item at a rate of 360,000 per month on a three eight-hour shift per day, five days per week operation on the following basis:

A. Price per 1,000,000 units (at average price of $4.60 per unit)	$4,600,000.00
B. Preproduction costs	125,000.00
	4,725,000.00

We now understand that we are to produce the subject item on the basis of operating only the first one-third of the plant at a production rate of 120,000 shells per month based on a one eight-hour shift per day, five day per week operation. On this latter basis we are quoting an average price of $4.925 per shell, based on a declining price per unit as follows:

Units	Price	Totals
First 250,000	$5.25	$1,312,500.00
Second 250,000	5.00	1,250,000.00
Third 250,000	4.80	1,200,000.00
Fourth 250,000	4.65	1,162,500.00
		4,925,000.00
Preproduction Costs		125,000.00
Total		5,050,000.00

Our quotations calling for an average price of $4.60 per shell on a 360,000 per month delivery schedule and $4.925 per shell on a 120,000 per month delivery schedule are both based on (1) our using commercial shell quality steel at a cost delivered to our plant in Eau Claire,

Wisconsin of $.05617 per pound, and (2) on the assumption that we will have 3% or less in the way of scrap due to or resulting from defective raw material. The specifications of the steel which we are presently planning to use are as follows:

> C–1018 Shell Quality killed Steel—Fine Grain—3½ inch round cornered square—½ inch corner radius.

To the extent that we run over 3% scrap due to or resulting from defective raw material and hence need a higher quality steel than that set forth above at a higher price than that quoted above, we understand that there will be an upward revision in our definitive contract to cover the increased cost of higher quality acceptable steel.

One further point should be noted here. You have asked that we furnish you with information concerning economical purchasing increments as well as lead time for the acquisition of raw materials and components in connection with the subject project.

For the purpose of administration, the items to be delivered under this contract are divided into economical purchasing increments consisting of 500,000 units each. Prior to the commencement of manufacture of any purchasing increment, the Contractor will require four months lead time for the acquisition of raw materials and components.

On the basis of the above furnished information and the enclosed Schedule "A", we understand that you will proceed to prepare the necessary definitive contracts for execution by both the Ordnance Department and ourselves. Since our present letter orders expire on December 4, 1953, it is imperative that every effort be made to expedite preparation and execution of the subject definitive contracts. Toward that end, we pledge you our complete cooperation.

If you have any questions on any of the matter in connection with the subject project, please contact the writer by telephone, collect.

With many thanks for your anticipated fine cooperation and kindest personal regards, I am

22. It is to be observed that no reference was made in the proposal quoted in the preceding finding to the matter of plunge grinders or other stock removal equipment, such as lathes, at the point in the shell line prior to the cold draw operation. Mr. Halpern explained in his testimony that the reason no reference was made to plunge grinders was due

to Haskell's firm refusal at the November 10th discussion to approve their inclusion.

23. On November 19, 1953, the District Chief, COD, advised the Commanding General, Ordnance Ammunition Center, Joliet, Illinois, that the list of facilities (contained in plaintiff's Schedule "A" submitted with the November 14th proposal) had been reviewed by the Engineering Branch, COD, and the facilities were suitable and adequate to produce 105-mm. cold-drawn shells at the rate of 360,000 shells per month on a one-shift, 8-hour day, 5-day week basis. The list of facilities was recommended from a technical standpoint by the Chicago Ordnance District.

24. Prior to November 14, 1953, the plaintiff's engineering representatives had engaged in extensive discussions extending over a period of many months, though not continuously, with representatives of machinery manufacturers as to what equipment would be required to produce 105-mm. shells by the hot forge-cold draw process. The Schedule "A" which was submitted on that date was the result of engineering work done by both the plaintiff and the machinery manufacturers. No representative of the latter was called as a witness in this case.

25. On September 24, 1953, the defendant issued, separately as to each contract, a Supplemental Agreement No. 1, granting an extension of time as to both the Facilities Contract, No. 1317, and the Supply Contract, No. 1316, from October 1, 1953, to December 4, 1953. Each was accepted by the plaintiff on September 30, 1953.

26. The definitive and formal contracts were executed as of December 4, 1953. Supplemental Agreement No. 2, Contract DA-11-022-ORD-1317, is the facilities contract and will hereinafter be referred to as Facilities Contract 1317. Supplemental Agreement No. 2, Contract DA-11-022-ORD-1316, is the supply contract and will hereinafter be referred to as Supply or Production Contract 1316. The contracts by their terms are clearly interrelated. One supplies the facilities with which the shells are to be manufactured under the other.

27. The pertinent parts of Facilities Contract 1317 are as follows:

SCHEDULE

WHEREAS, the Government and Contractor entered into Supply Contract No. DA–11–022–ORD–1316 pursuant to which terms Contractor agreed to furnish and deliver to the Government a quantity of Shell, HE, 105MM, M1 for 105MM Howitzer by the use of a hot forge and cold draw process; and

WHEREAS, in the negotiations of the aforesaid Supply Contract, the Parties hereto recognize that Contractor will require Government facilities for the manufacture of said end item of supply; and

WHEREAS, the Government and Contractor did under date of 4 June 1953 enter into Letter Contract known and designated as Letter Contract No. DA–11–022–ORD–1317 providing for Contractor to acquire and install the facilities listed on Schedules "A" and "B" annexed hereto and made a part hereof; and

WHEREAS, it is desired at this time to formalize the said Letter Contract by this more definitive instrument; and

WHEREAS, the Government desires to provide the property listed in Schedules "A" and "B" to the Contractor for use in the production of 105MM, M1 Shell by a combination hot forge and cold draw process at the rate of 360,000 per month on a one-shift, eight-hour five-day week basis, which equipment will also enable Contractor to produce an M60, 105MM Chemical Shell (except for adaptors to be purchased from outside sources, and with the addition of all necessary special tooling) on one-third of the facility at a rate of 120,000 per month on a one-shift, eight hour five-day week basis, and which equipment is also capable of use in 110MM Shell production (with additional equipment and all necessary tooling); and

* * * * *

TITLE I

ACQUISITION OR MANUFACTURE OF FACILITIES

Article I–A. Procurement of Facilities

1. The Contractor shall, in the shortest possible time, acquire for resale to the Government or manufacture for sale to the Government, the machinery, equipment or other industrial facilities hereinafter referred to as "facilities" listed in Schedule "A" attached hereto and expressly made a part hereof. Such facilities shall be installed by Contractor in its plant at Eau Claire, Wisconsin, or if approved in writing by the Contracting

Officer, in its other plants, or for temporary use in the plants of first tier subcontractors.

2. The Contractor may, with the written approval of the Contracting Officer, substitute facilities similar to those in Schedule "A", or may add additional facilities thereto from time to time as required during the course of the work, in which event Schedule "A" will be modified accordingly. Copy of all approved revisions or changes of said Schedule "A" shall be furnished the Contracting Officer so that, at all times, his copy of Schedule "A" will be current and include all approved modifications. A final revised Schedule "A" containing all modifications shall be incorporated in the contract by supplemental agreement hereto, upon completion of the work under Title I.

3. Title to all property purchased by the Contractor, for resale to the Government, for the cost of which the Contractor is entitled to be reimbursed as a direct item of cost under this contract, shall pass to and vest in the Government upon delivery of such property by the vendor. Title to all property manufactured by the Contractor, for sale to the Government, for the cost of which the Contractor is entitled to be reimbursed as a direct item of cost under this contract, or for which the Contractor is entitled to payment in accordance with Paragraph 1c of Article III–A hereof, shall pass to and vest in the Government upon delivery of such property by the Contractor. * * *

* * * * *

6. Notwithstanding the provisions contained in Article VI–J entitled "Subcontracts", any purchase order in excess of $25,000.00 shall be subject to prior approval of the Contracting Officer. * * *

Article I–B. Diversion of Schedule "A" Facilities.

The Contracting Officer may direct the diversion of any item of Schedule "A" facilities to the Government or to any person designated by the Contracting Officer when such items shall have been acquired or its manufacture shall have been completed. * * * Upon diversion, such item will be eliminated from Schedule "A", and an equitable adjustment shall be made in the delivery or performance dates, or price, or both, and in any other contractual condition of the related supply contracts. * * *

Article I–C. Elimination from Schedule "A".

1. The Contracting Officer may determine at any time prior to installation of any item of Schedule "A" facili-

ties, that such item is not reasonably necessary for the performance of this contract or any related supply contracts. Notice of this determination will be furnished in writing by the Contracting Officer to the Contractor.

2. No later than ten days after receipt of such notice, the Contractor will notify the Contracting Officer if any binding commitment has been made or expense incurred with respect to acquisition or manufacture of such item. In the event no binding commitment or expense has been incurred with respect to acquisition or manufacture of such item, the item will be eliminated from Schedule "A" and the Government shall be relieved from any liability therefor.

* * * * *

Article I–D. Estimates.

It is estimated that the total cost of the Contractor's performance under Title I of this contract will be approximately Thirteen Million One Hundred Ninety-four Thousand Eight Hundred Forty-one Dollars ($13,194,841.00) exclusive of the cost of any Government-furnished property. It is expressly understood, however, that neither the Government nor the Contractor guarantees the correctness of these estimates. The estimated costs set forth above are based upon the estimate approved and agreed to by the Government and the Contractor, a copy of which is on file in the office of the Contracting Officer.

Article I–E. Consideration.

As consideration for its undertaking under Title I, the Contractor shall receive reimbursement for expenditures as provided in Title III hereof. It is expressly understood that the Contractor shall be entitled to no fee or profit for the acquisition, manufacture or installation of Schedule "A" or "B" facilities, * * *.

* * * * *

Title IV

Terms and Conditions Governing the Use of Facilities

Article IV–A. Use of Facilities.

Subject to the terms and conditions hereinafter set forth, the Government hereby grants the Contractor the right to use Schedule "A" and Schedule "B" facilities for the production of 105MM Sheil, as set forth in 5th Wherras clause on Page 1 of this contract, DA–11–022–ORD–1316 without the payment of rental therefor. The Contractor hereby agrees that no part of the cost of

Schedule "A" or Schedule "B" facilities in the form of depreciation or amortization has been or will be included in the price of the end items under the contracts for which Schedule "A" or Schedule "B" facilities have been authorized for use. * * *

* * * * *

Article IV–D. Withdrawal of Schedule "A" and "B" Facilities.

Items of Schedule "A" and "B" facilities shall remain in the possession of the Contractor or its first tier subcontractors as provided for in Article IV–A of Title IV for such period of time as is required for the performance of related supply contract(s) unless the Contracting Officer determines that the best interest of the Government requires removal of any or all items. In such cases, the Contracting Officer may direct the dismantling, removal, and shipment of the property. Reimbursement shall be in accordance with the provisions of Article V–A of Title V. An equitable adjustment shall be made in the delivery or performance dates, or price, or both, and in any other contractual condition of the related supply contracts affected hereby. * * *

* * * * *

Article IV–F. Termination of Right To Use.

1. The right of the Contractor to use the facilities under this contract may be terminated by the Government in accordance with this article, in whole or in part, whenever the Contracting Officer shall determine such termination is in the best interest of the Government. Any such termination shall be effected by delivery to the Contractor of a written notice of termination specifying the extent to which such right to use the facilities has been terminated and the date upon which such termination becomes effective. An equitable adjustment shall be made in the delivery or performance dates, or price, or both, and in any other contractual condition of the related supply contracts affected thereby. * * *

* * * * *

Title V

Disposition of Facilities

Article V–A. Dismantling and Removal.

1. Whenever it is determined that all or any part of Schedule "A" or "B" facilities are no longer required in

the performance of the Contractor's prime or subcontracts for which the facilities have been authorized for use or upon termination in accordance with Article IV–F of Title IV, the Contractor agrees that such facilities will be retained in accordance with Article V–B. * * *

* * * * *

Article V–B. Retention and Disposition.

In the event a determination is made as provided in Article V–A that any or all facilities are no longer required in the performance of the Contractor's contracts for which Schedule "A" and Schedule "B" facilities have been authorized for use, and the Contracting Officer has not directed the removal of such Schedule "A" and Schedule "B" facilities from the Contractor's plant, the Contractor hereby agrees that such facilities shall be retained in the plant for a period of 90 days except that such facilities may be stored elsewhere by the Contractor if the Contractor requires use of the plant for production. * * *

* * * * *

Article V–F. Standby

* * * * *

(b) (1) It is hereby negotiated and agreed by the Parties hereto that, at such time as a determination is made as provided in Article V–A, that all facilities are no longer required in the performance of Contractor's contracts, for which Schedule "A" and "B" facilities have been authorized for use, Contractor agrees to place said facilities in standby in accordance with applicable Government specifications at a price to be negotiated and, subject to the availablity of funds, to maintain all said facilities "in place standby" in accordance with the terms of OCTI 450–53, Section XII, except that only sufficient power shall be available to permit activating mechanical parts of equipment one piece at a time at a rate of once per month for each piece of equipment, for the sum of One Hundred Eighty-one Thousand Three Hundred Sixty Dollars ($181,360.00) per annum for a period of Ten (10) years.

(2) The Parties hereto further agree that, at such time as the installation of all the facilities under this contract are substantially completed, the Contractor shall maintain the two-thirds of the facilities, not needed in the performance of Supply Contract No. DA–11–022–ORD–1316 as presently in effect, "in place standby"

under terms and conditions to be negotiated by the Parties hereto; provided, however, that such negotiated cost of standby shall not exceed two-thirds of the total facilities standby charge of One Hundred Eighty-one Thousand Three Hundred Sixty Dollars ($181,360.00). In the event that any other portion of facilities is placed in standby, then the negotiated cost of such standby shall not exceed the proportionate amount of One Hundred Eighty-one Thousand Three Hundred Sixty Dollars ($181,360.00) as the percentage of the dollar amount of facilities being placed in standby bears to the total dollar value of the facilities under this contract.

* * * * *

TITLE VI

GENERAL PROVISIONS

* * * * *

Article VI–W. Modification of Letter Contract.

This supplemental agreement shall supersede the aforesaid Letter Contract. In the event that this supplemental agreement contains provisions which may be construed to be inconsistent in any particular with the provisions of the aforesaid Letter Contract, then the provisions of this supplement shall be deemed to state the complete agreement and intent of the Parties hereto, and any rights, duties and/or obligations created by the provisions of the aforesaid Letter Contract shall be merged within the terms of this supplemental agreement.

28. The Schedule "A" referred to and attached to Facilities Contract 1317 did not include plunge grinders or any turning equipment and was identical with the schedule submitted with plaintiff's proposal of November 14, 1953.

29. The pertinent parts of Supply Contract 1316 are as follows:

SCHEDULE

WHEREAS, the Parties hereto entered into Letter Contract No. DA–11–022–ORD–1316 dated 4 June 1953, the expiration date of which has been extended to 4 December 1953 by Supplemental Agreement No. 1, for the production of Shell HE, 105MM., M1; and

WHEREAS, the Parties now desire to supplement said Letter Contract by this definitive contract; and

NOW, THEREFORE, the Parties hereto do mutually agree as follows:

ARTICLE 1. *Scope of this Contract.* (a) The Contractor shall furnish and deliver:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1a	Shell, HE, 105MM, M1 for 105MM Howitzer.	250,000	each	$5.375	$1,343,750.00
1b	Shell, HE, 105MM, M1 for 105MM Howitzer.	250,000	each	5.125	1,281,250.00
1c	Shell, HE, 105MM, M1 for 105MM Howitzer.	250,000	each	4.925	1,231,250.00
1d	Shell, HE, 105MM, M1 for 105MM Howitzer.	250,000	each	4.775	1,193,750.00

for the total stated consideration of Five Million Fifty Thousand Dollars ($5,050,000.00).

The above contract price is predicated on the use of C–1018 Shell Quality Killed Steel, Fine Grain—3½" Round Cornered Square—½" Cornered Radius at a price of $.05617 per pound f.o.b. Contractor's plant at Eau Claire, Wisconsin. The Parties hereto agree that in the event that such steel results in a scrap incidence in excess of 3% due to the quality of the steel, thus requiring the use of steel of a different type or with different specifications, or in the event the Government directs use of other types or specifications of steel, an equitable adjustment shall be made in the contract price hereunder in the same manner as a change under the "Changes" provision of the said contract, which adjustment will be limited solely to the difference between the price of such other types or specifications of steel and that upon which the aforementioned price is based.

(b) *Specifications.* Contractor agrees to manufacture and deliver Items 1a, 1b, 1c and 1d above, by the use of combination hot forge and cold draw processes, in accordance with specifications contained in Basis of Procurement BP–S–94 (Rev. 2) dated 9 December 1952, Amendment 3, dated 14 April 1953, brought up to date 2 July 1953.

(c) *Inspection, Acceptance and Delivery.* Inspection and acceptance of supplies to be furnished hereunder shall be made at Contractor's plant, with delivery f.o.b. Contractor's plant, Eau Claire, Wisconsin, or nearest railroad siding as specified by the Transportation Officer of the Chicago Ordnance District, as follows:

MONTH AND YEAR	QUANTITY
July, 1954	Pilot lot
August, 1954	5,000
September, 1954	20,000
October, 1954	50,000
November, 1954	80,000
December, 1954 thru May, 1955 (per month)	120,000
June, 1955	125,000

(d) *Pilot Lot.* The Contractor is required to furnish the Pilot Lot Laboratory at Jefferson Proving Grounds, a Pilot Lot consisting of Five (5) unpainted and unbanded and Twenty-five (25) banded and unpainted Shells; Ten (10) complete Shells, for approval prior to initiating quantity production hereunder. This Pilot Lot must be manufactured with exactly the same equipment, processes and procedures as will be used in regular production, and all parts and materials must be obtained from the sources of supply that will be used for regular production. The required Pilot Lot is not to be construed as an additional quantity but is taken into consideration in the total amount of the contract. The Pilot Lot will be inspected by the Ordnance inspector prior to submission to the Pilot Lot Laboratory. In event additional lines are used by Contractor in the manufacture of above quantity, a complete Pilot Lot from each of such lines will be furnished.

* * * * *

4. Production increments and lead time periods may be varied, as circumstances require, by mutual agreement of the Parties, and embodied in a supplemental agreement to this contract.

(g) *Use of Government-furnished Property.* In the performance of the services required hereunder, Contractor is hereby authorized the use of facilities and tooling acquired under Contract No. DA–11–022–ORD–1317.

* * * * *

(i) *Modification of Letter Contract.* This supplemental agreement shall supersede the aforesaid Letter Contract. In the event that this supplemental agreement contains provisions which may be construed to be inconsistent in any particular with the provisions of the aforesaid Letter Contract, then the provisions of this supplement shall be deemed to state the complete agreement and intent of the Parties hereto, and any rights, duties and/or obligations created by the provisions of the aforesaid Letter Contract shall be merged within the terms of this supplemental agreement.

* * * * *

30. Upon the execution of the two contracts, plaintiff set up a procedure for screening the equipment that was to be acquired pursuant to the facilities contract. Before orders could be placed for the equipment, it was necessary to complete an engineering study of each operation and determine

what equipment was best suited to do the job. The engineering studies revealed that in most instances the required equipment did not exist, and special designs had to be prepared for the equipment. Quotations were then obtained from equipment vendors. After the bids were evaluated by plaintiff's engineering and personnel staffs, a recommendation was prepared by Soper, the project manager; and this recommendation together with the bids received, was reviewed by an "executive board" set up within the plaintiff organization.

The facilities contract required that all purchase orders in excess of $25,000 were subject to the prior approval of the contracting officer. After plaintiff's executive board reached a decision, its recommendation, along with a justification for its selection, was sent to the Chicago Ordnance District. Upon receipt of approval from the contracting officer, the equipment was ordered from the vendor. Since practically all of the equipment was of large size, all of it had to be approved by the contracting officer.

During the time that the equipment was being selected, plaintiff's plant was being placed in readiness for its installation. Railroad sidings were installed; a steel yard was constructed; alterations were made in the walls and floors; and a power station was installed. In addition, considerable experimental work was conducted at the Menomonie plant.

31. On March 17, 1954, the Chicago Ordnance District wrote plaintiff that the requirements for 105-mm. shells would be drastically curtailed nationally, effective May 1, 1954, and that all producers of such shells would be terminated as of April 30, 1954. The letter stated that this would result in the termination of all unproduced quantities then under contract with producers not selected to continue the program. Plaintiff was invited to submit a firm proposal for the continuity of production after May 1, 1954, based on the lowest rate of production, but in no event exceeding 60,000 shells per month.

At this time plaintiff was producing shells by the conventional process at its Menomonie plant under Supply Contract 918,[20] and was in the process of completing its engi-

[20] This was a separate production contract by conventional process.

neering studies and placing orders for equipment for the Eau Claire plant.

By telegram dated March 19, 1954, plaintiff was directed to terminate all shell production scheduled for delivery subsequent to May 1, 1954, under Supply Contract 1316. This was confirmed by letter dated April 6, 1954. A similar notice of termination was received with respect to production at Menomonie under Supply Contract 918.

32. Following further negotiations with the Chicago Ordnance District, plantiff submitted a revised proposal on April 28, 1954. In this proposal plaintiff offered to produce 1,100,000 105-mm. shells at a fixed price of $5.2499 per shell, delivery to be at the rate of 40,000 shells per month for 6 months, commencing May 1, 1954, and at the rate of 60,000 shells per month thereafter. The letter stated that plaintiff understood that Supply Contract 918 (the Menomonie Supply Contract) would be terminated effective April 30, 1954, and that Supply Contract 1316 (the Eau Claire Supply Contract) would be reinstated and amended so as to increase the quantity of shells from 1,000,000 to 1,100,000 and the average price per shell from $5.05 to $5.2499. The letter further set forth the agreement of the parties that plaintiff would be permitted to manufacture the shells with the equipment provided under Facilities Contract 917 (the Menomonie Facilities Contract) or Facilities Contract 1317 (the Eau Claire Facilities Contract) and to make delivery of the shells from either the Menomonie plant or the Eau Claire plant.

This proposal was made in the light of the then state of the installation at Eau Claire. Plaintiff understood that the Ordnance Department was very much interested in proving out the shell lines at Eau Claire and agreed to start producing there as soon as possible.

33. On April 30, 1954, the Notice of Termination of March 18, 1954, was rescinded by the Chicago Ordnance District. The rescission agreement recited in relevant part as follows:

> Subject: Rescission of Notice of Termination, Contract No. DA-11-022-ORD-1316
>
> * * * * *
>
> Pursuant to instructions received from higher headquarters and in accordance with negotiations between

your company and the Government, it is hereby agreed, upon your acceptance hereof, that the above contract is a valid and subsisting document and shall continue in full force and effect in accordance with its terms except as hereinafter modified.

Pursuant to the negotiations with your company and/or to the revised "Changes" article of subject contract, you are hereby authorized to proceed with the manufacture of the formerly terminated and now reinstated quantity of one million 105MM Shell, HE M1 MPTS on a fixed price basis not to exceed $5.2499 per unit and to deliver such supplies at the rate of forty thousand per month beginning 1 May 1954 through 31 December 1954 and sixty thousand per month beginning 1 January 1955 through 31 January 1956. The said price of $5.2499 shall be a fixed price not subject to any price redetermination for escalation articles which may appear in said contract. Deliveries may be made either f.o.b. your plants, [Menomonie], Wisconsin or Eau Claire, Wisconsin, at your option. You are authorized to use Government-owned facilities at either or both of the said plants in the manufacture of the items of supply at the delivery rates specified above.

34. A formal supplemental agreement (Supplemental Agreement No. 3 to Supply Contract 1316) was entered into as of June 30, 1954. It recited in pertinent part as follows:

WHEREAS, the parties hereto entered into Contract No. DA-11-022-ORD-1316 providing for the furnishing of Shell H-E 105MM, M-1 for 105MM Howitzer; and

WHEREAS, prior to the execution of the foresaid contract the parties hereto had entered into contract [DA]-11-022-ORD-918 for the furnishing of the identical item of supply; and

WHEREAS, under date of 7 April 1954, Contract No. DA-11-022-ORD-918 was terminated pursuant to "Terminacion For Convenience of the Government" clause of the said contract and under date of 6 April 1954 contract number DA-11-022-ORD-1316 was terminated in accordance with the terms of "Terminations For Convenience of the Government" clause of said contract, both terminations effective as of 1 May 1954; and

WHEREAS, as a result of subsequent negotiations the parties hereto did agree to re-instate a combined quantity of 1,100,000 shell H-E 105MM at a fixed price of $5.2499; and

WHEREAS, for the administrative convenience of the government it was determined that contract DA-11-022-

ORD-918 remain terminated and that the complete reinstated quantity be procured under contract DA-11-022-ORD-1316; and

WHEREAS, to facilitate contract administration as aforesaid, it has been agreed that Notice of Termination of Contract DA-11-022-ORD-1316 be rescinded and be considered null and void and of no effect whatsoever; and

WHEREAS, the parties hereto agree that the unit price of $5.2499 shall be on a fixed price basis not subject to any price redetermination or escalation articles which may appear in the said contract, except for the clause presently contained in paragraph (a) of Article 1 of said contract pertaining to type of steel upon which price is predicated; and

* * * * *

Now, THEREFORE, the parties hereto do mutually agree as follows:

1. That paragraph (a) of Article 1 of said contract, as amended, be deleted in its entirety and the following inserted in lieu thereof:

Article 1. *Scope of this Contract.* (a) The Contractor hereby agrees to furnish and deliver to the Government the following supplies:

Item	Description	Quantity	Unit Price	Total Price
1	Shell H-E, 105MM, M-1 for 105MM Howitzer, MPTS	1,100,000	$5.2499	$5,774,890.00

for the total stated consideration of Five Million, Seven Hundred Seventy-Four Thousand Eight Hundred Ninety Dollars ($5,774,890). * * *

2. That paragraph (b) "Specifications" be deleted in its entirety and the following inserted in lieu thereof:

(b) *Specifications.* Contractor agrees to manufacture and deliver Item 1 above under the conventional method of manufacture at the Menomonie Plant and by the use of combination hot forge and cold draw processes at the Eau Claire Plant in accordance with specifications contained in Basis of Procurement BP-S-94 (Rev. 5) 25 March 1954 brought up to date 25 May 1954.

3. That paragraph (c) of said Article 1 be deleted in its entirety and the following inserted in lieu thereof:

(c) *Inspection Acceptance and Delivery.* Inspection and acceptance of supplies to be furnished hereunder shall be made at contractor's plants Menomonie, Wisconsin, or Eau Claire, Wisconsin, at the Contractor's

option, with delivery f.o.b. contractor's plant at Menomonie, Wisconsin and/or contractor's plant at Eau Claire, Wisconsin or nearest railroad siding as specified by the Transportation Officer, Chicago Ordnance District as follows:

Month and year	*Quantity*
May 1954 through December 1954	40,000 per month
January 1955 through January 1956	60,000 per month

4. That the following sentence be added at the beginning of paragraph (d) of Article 1 of said contract (pilot lot):

> The pilot lot requirements as specified hereunder shall apply to manufacture at the Eau Claire, Wisconsin Plant, only.

5. That paragraph (g) of Article 1 of the said contract be deleted and the following inserted in lieu thereof:

(g) In the performance of the services required hereunder, Contractor is hereby authorized the use of facilities and tooling acquired under Contracts DA-11-022-ORD-917 and DA-11-022-ORD-1317. Tooling, if any, amortized in the unit prices of contract DA-11-022-ORD-918 shall be treated and held in accordance with the terms and conditions of the Special Tooling clause of said contract DA-11-022-ORD-918, except that action thereon pursuant to the provisions of said clause shall be deferred until termination or completion of this contract DA-11-022-ORD-1316 as amended herein.

* * * * *

35. As of the time the agreements of April 30, 1954, and June 30, 1954, were executed, it was the understanding of the parties that the shells to be shipped from Menomonie would be made with the facilities acquired under the Menomonie Facilities Contract (917) and that the shells to be shipped from Eau Claire would be made with the facilities acquired under Facilities Contract 1317. As of those dates, no equipment had as yet been installed at Eau Claire and, of course, no shells had as yet been made there.

36. Although the original formal contract called for production to begin in July 1954, plaintiff was not able to assemble sufficient equipment to begin preliminary operations until the summer of 1955. In the meantime, shells were being produced under Supplemental Agreement No. 3

to Supply Contract 1316 by the conventional process at Menomonie. By August 31, 1955, 801,264 shells had been shipped from Menomonie. At this rate, it appeared that the entire 1,100,000 shells called for by the contract would be delivered before the hot cup-cold draw line at Eau Claire would even be tested. The concern of the Chicago Ordnance District at this prospect resulted in a conference between officials of the plaintiff and the District on September 1, 1955, at which it was agreed that the rate of production at Menomonie would be reduced from 50,000 to 40,000 shells per month, starting September 1, and a directive to that effect was sent to plaintiff on September 2. It was also understood that production at Menomonie should be phased out by November 30, leaving about 180,000 shells to be produced at Eau Claire.

On September 9, 1955, plaintiff acknowledged receipt of the September 2 directive and stated, in part, as follows:

> As a result of this directive, you are hereby advised that production operations at our Menomonie, Wisconsin facility will cease as of 30 November 1955. Based on the cessation of work at Menomonie on the date hereinbefore indicated we wish to further advise that the delivery schedule for the balance of the contract will be revised and adhered to by this organization as follows:

Month	Delivery From Eau Claire	Delivery From Menomonie
September 1955	1,000	40,000
October 1955	5,000	40,000
November 1955	10,000	40,000
December 1955	30,000	------
January 1956	40,000	------
February 1956	50,000	------
March 1956	42,736	------

37. By October 10, 1955, the plaintiff had produced about 3,000 shells, some of which constituted the pilot lot for testing by the defendant. On that day, Mr. L. G. Soper, who had advanced within the plaintiff's organization to the position of vice president and director of engineering, read a paper before the American Ordnance Association discussing the process of making shells at the plaintiff's Eau Claire plant under the contracts in suit. Because that paper represents a clear exposition of the details of the process and discussed contemporaneously some of the problems then facing the plaintiff, it is quoted, in full, as follows:

HO-CO Process of Shell Manufacture

[Hot Cup-Cold Draw Process]

N.P.I. at the present time is establishing facilities at Eau Claire, Wisconsin for the production of approximately 1,000,000 shell per month on a three shift, five day production basis. This production, and equipment for production, as well as the building, has been planned so as to have six straight lines for the production of this quantity of shell. These lines, including the storage facilities for the steel bars, are approximately 1,000 feet long and are all housed under one roof, being so planned that the steel enters at one end of the building and the finished shell are completed at the opposite end of the building. With this brief description of the plant, I will proceed with something which apparently will be of greater interest to you: that is, the description or process by which the shell are manufactured.

The steel contemplated for use in the manufacture of the shell is C–1018, and is purchased in 3½″ round cornered square bars. Other specifications are similar to those now specified for the manufacture of conventional Hot Forged shell. However, for experimental purposes, we are currently using C–1025 steel, with the highest residual content obtainable in commercial quality steel.

The process is begun by bringing the material into the building with overhead cranes and distributing it to a series of high speed band saws. This distribution takes place after the parts have passed over a conveyor provided with gas heating for the elimination of snow and ice from the material during cold weather months. After delivery to these saws, the bars are placed in an automatic cycle and cut to a length of approximately 8″. These automatic saws run with high speed steel blades having a cutting cycle of less than one minute per cut and are run entirely automatically, with the exception of the initial feeding of the bar into the saw and the sawing of the last part. The sawed parts are then picked up by a conveyor and carried to a combination washer-dryer, in which the parts are washed clean of the cutting fluids used in sawing. In addition, this machine, by its washing and drying action, removes the frost from the inside of the bars. Upon completion of this operation, the parts are automatically dumped into a continuous barrel type abrasive cleaning machine which removes all scale and rust and deburrs. Thus, at

this point we have a slug of steel 3½" square, 8" long and weighing approximately 1 pound above the finished weight of the shell. These slugs are then fed into an induction heating device on two different cycle frequencies, the first of which is a 60 cycle induction coil, where the slugs are brought up to a temperature of approximately 1300°. They then continue on to a 960 cycle coil which brings the parts up to approximately 2100 to 2150 degrees temperature. This is a pusher type machine in which the parts are pushed through the induction coils, the heat is checked at the discharge end, and parts not properly brought up to heat are automatically discharged. The hot slugs are then automatically fed into a 3-station 1700 Bliss transfer press. This press is mechanical in action, with the center or the cabbaging station containing a hydraulic overloading device. The first operation accomplished in this press is the sizing of the billet. In this operation, the billet is simply pushed down into the die, forming the boat tail and squaring the billet out to fill the pot properly. It is then transferred to the second or center position in which a cabbaging punch engages into the shell for a distance of approximately 3", filling the part out to a uniform cabbaged part. Finally, it is transferred within the same press to the third station, where the part is pierced to a length of approximately 11". All three stages of the aforementioned press contain guided dies. By that we mean the piercing punches of the dies are guided directly through bushings into the bottom section of the dies, the purpose, of course, to aid in maintaining concentricity. Concentricity requirements at this station are held to a .030 total indicator reading. Parts, as they emerge from this forging press, are quite clean and free of scale, the time cycle having been approximately 8 minutes from the time they started thru the induction heating device until they cleared thru the last stage of the forging operation. It has been determined that this lack of scale is infinitely important where a concentric forged part must be maintained. After this forging is complete, the parts which are now at a temperature of approximately 1850° are placed into a retard cooling furnace, wherein they are cooled from the 1850° temperature to a temperature of approximately 100°. This gradual cooling cycle is extended over a time period of approximately 1 hour, 50 min., after which the parts are removed and placed in a continuous skew roll abrasive cleaning machine, in which shot is thrust against the exterior and the interior of the part, removing all scale, discoloration and, in general, cleaning and stress peen-

ing the part for the following operation. Parts are checked at this point for surface irregularities, either internal or external and, of course, they are also checked dimensionally and for concentricity.

The next operation is that in which the parts are sent thru a series of tanks in which they are washed, pickled, phosphate coated, soap coated and dryed in preparation for cold drawing. This latter operation is accomplished on a horizontal hydraulic press and produces a part which has been extended from the forging to a casing approximately 15½" long. The part is drawn to the finished cavity size and to the finished body diameter.

The next operation, trimming, is performed on a Bardons and Oliver machine, similar to a machine used in the cutting of pipe stock for nipples, and is merely an operation where tools cut off the excessive length and chamfer the inside and outside of the open end of the shell. The shell is now a trimmed casing with the physicals developed in the sidewall, with the base of the shell, however, still in an undeveloped state. Therefore, the part is taken into a coining operation, performed on a 1500 ton horizontal mechanical press, having a three station dial. Parts are loaded into the press in the first station of the dial. In the second station, or work station, the parts are coined and the open ends upset, and in the third station they are unloaded. Through using this medium, we are, of course, able to secure a very high productive rate, inasmuch as a finished part is produced with each stroke of the press, while the automatic loading and unloading cycle permits the press to be run automatically and continuously. The work performed in this operation is intended to expand both bourrelet diameters to the given size, to coin out the base and to bring the physical properties in the base area up to requirements. In addition to this, the open end of the shell is upset. This upsetting gathers a greater amount of stock for threading at the open end of the shell, which is required to give us enough thread depth. Previous attempts to obtain this added material were carried out by bottle-necking the cold draw punch and, thus, when the part was stripped from the punch, the material remained in the bottle-neck section and was simply expanded to the outside. It was stripped over the larger diameter at the base of the punch, which proved unsatisfactory from two standpoints: one, that it was extremely difficult on the tooling and two, that it created expansion in the material diameter, thus, creating a cracking condition at the open end of the shell.

Following the coining, the parts are lubricated for nosing and are entered into a nosing press. The nosing press, again, is a horizontal press, mechanical, 500 ton capacity, three station dial, the first station being the loading station, the second station being the work, or the nosing station, and the third station being the unloading station. Again, with this type of machine, we are, of course, able to maintain a high production rate. This is a simple operation, similar to that used in the conventional process, with the exception that we are nosing the part directly to size. In the bottom section of the die, are collets, which, upon the application of pressure by the die, are brought into action to restrict the body diameter from flowing out or bulging out beyond the tolerance limitations. Subsequently, the shell are put through a stress relief furnace. Experimental parts have been put thru these furnaces from temperatures ranging from 700 to 1000°, and we are currently using a temperature slightly over 900° F. The parts are placed onto a continuous conveyor belt in a vertical position with the nose down. In the first stages of the machine, the parts are washed and the compounds that have been placed there for the nosing and the coining operations are removed. Secondly, a gas heated chamber brings the parts up to temperature, and the stresses which have been placed into the part, through cold working, are relieved. After going through this chamber, the parts are cooled in cooling chambers and then, upon discharge they are placed in a horizontal broach in which the bourrelet diameters are broached to size. Work has been done in this stage using drawing rings, but we are currently changing to broaching rings. It was found that, due to the spring back in this material, it is difficult to control the exact size of the bourrelet thru this drawing operation, and it is contemplated that broaching will be a more successful and less troublesome type of operation.

After the broaching operation, one of the few other machining operations is accomplished. This is performed on a single spindle automatic lathe, the operation of which is such that the parts are automatically fed into and ejected from the lathes. The parts are held in a chuck on the boat tail and by a steady rest over the ogive. Tools operating from both the front and the rear slides then turn the band groove, and a reamer comes in from what would normally be the tail rest position, reams the ogive hold to diameter, and faces and chamfers the open end of the shell. A specially designed machine then chamfers the boat tail and mills

in the staking notches on the opposite end. The boat tail of these shells must be chamfered or deburred, inasmuch as the knock out in the coining die causes a bleeding of material around the edge of the boat tail. After this operation, knurls are made in the band groove rings by means of a marking machine.

A conventional tapping operation where the ogive is tapped to the given dimension is subsequently performed in a double spindle tapping machine. At this point the parts are completely checked by the use of manual and pneumatic gages. Upon acceptance of parts, they are then placed in a machine which subjects them to a series of tanks, wherein they are again washed, chemically cleaned and dryed, and are forwarded to welding machines. The welding machines are horizontal machines in which, in the first stage, the base plate is pre-tacked into position, thus eliminating any possibility of mislocating the base plate. The parts then are seam welded and annealed in the second stage. Following this operation, the parts are forwarded to the banding machines, which actually are horizontal hydraulic presses. The shell go into the press, bands are fed from a magazine above and are pressed on in a manner quite similar to that used with Dennison presses, the only difference being the fact that the presses have an ejection cylinder working from the opposite end, and the parts are automatically ejected from the die and from the machine.

The copper band is next turned on a band turning machine, which, being a conventional operation, needs no further description. The bands are then checked for tightness, and the parts are again inspected, after which they go through the marking machine and then, in turn, thru the cleaning and phosphatizing machines, and finally into the paint machine for painting. The equipment used in this operation is similar to that used for conventional methods. One greater difficulty has been encountered here though. Due to the very smooth shell, there has been some difficulty getting a thickness or coating of paint heavy enough to withstand salt spray requirements. After the painting, of course, the parts are placed on pallets, as in the conventional process, and, thus, the processing of this Hot Forged, Cold Drawn Shell is concluded.

It might be worthy to note that, in this process, we have in no place turned material from the shell, with the exception of the band groove and the boring and facing of the ogive. With no removal of stock, naturally we are permitted to start with a greatly reduced amount of material. However, we had to develop a process on

which the forging was extremely accurate and in which the forgings produced would have a very good surface finish. To date, with 3000 forgings carefully inspected, we can say we haven't had problems of poor surface conditions and should similar results continue, we would not use any method for removal of stock from the O.D. of the forgings.

Further, it should be noted that there are no heat treating operations, and the part is brought up to heat but twice—for the forging operation and stress relief. The forging is worked to the fullest degree possible in this forging operation and then worked the balance of the way thru cold working, to bring the desired physicals into the shell. A great deal of experimentation and engineering has been necessary, of course, to perfect this type of forging operation. It must be noted that this forging is a very important factor in this type of operation and too much care cannot be emphasized on this phase of the operation. An improperly forged part cannot be salvaged in this process, as the initial stock from which we start the operation does not allow material to be turned and still end up with the proper weight of the finished shell.

Yes, die design all the way down the line is the important factor. It must be coordinated in all phases to bring out a finished shell within tolerances, and further, it must be carefully coordinated with a metallurgist, in order to bring out the proper physical characteristics which are required in the shell. We feel that this process has great possibilities. It has possibilities, we think, of making shell with a steel of the same quality used in the conventional Hot Forge Process and, of course, using a great deal smaller quantity of that steel. Finally, it eliminates many costly operations, such as heat treating, rough turning, finish turning, all of which, undoubtedly, count for a great deal of expense in the conventional manufacturing methods.

38. In producing the 3,000 shells referred to in the preceding finding, only the first of the six production lines was utilized and the tempo of production was markedly less than under the conditions of full mass production.

39. The 1,700-ton Bliss 3-stage presses which were utilized in effecting the hot forging were delayed in delivery from the manufacturer to the plaintiff's Eau Claire plant. Six were delivered, the first two in February 1955. One of these was installed in Line No. 1 in April 1955, and the other five were

installed in September 1955. Thereafter, it was necessary for the Bliss erection crews to make certain corrections to the presses. The entire job was, according to the plaintiff's vice president, delayed by two and one-half months for which he, on behalf of the plaintiff, claimed $110,000 from the Bliss firm. The disposition of that claim is not shown in the record.

40. The facilities contract called for reimbursement to the plaintiff of the costs of installation of the machinery it purchased for inclusion in the line. The plaintiff was paid for these costs. As an indication of delays encountered, however, there is quoted below a paragraph of a letter from the plaintiff to COD, dated August 3, 1955:

> It would be pointed out at this time that, notwithstanding the fact that estimated costs of installation have been increased by $301,652.58, the greatest share of this increase can be attributed to the fact that this organization has been instructed by the Ordnance Department to purchase numerous items of equipment over which we had no control. Repeated delays in deliveries have been experienced on these numerous items with the net result that this organization has expended over $500,000.00 which was not originally contemplated as a result of having to hire additional erection crews for accelerated delivery, committed by the machine tool vendors and, due to delivery failures against the committed schedule it was necessary to cut back erection crews and again rehire. You are no doubt cognizant that such measures are extremely costly especially in that it has meant an expenditure on the part of this organization of several hundred thousand dollars.

41. By December 15, 1955, the plaintiff had produced a total of about 13,000 105-mm. shells at its Eau Claire plant. When plaintiff stepped up its production rate after completion of the pilot lots, it began to experience serious difficulty with the concentricity of the shells. With defendant's acquiescence and approval plaintiff attempted, over a period of time, to overcome this problem without using turning equipment.

42. Even after the line at Eau Claire had finally been installed, plaintiff experienced many difficulties with the equipment. It was found that the induction heating process was defective, necessitating changing the rails in the unit

to a special alloy. The ejector mechanism of the forging press failed to work properly. There was also a problem with the tensile properties of the shell. Ordnance required an elongation or stretching factor of 15 percent. Tests showed subnormal yield strengths and elongation of less than 15 percent. This was due to the failure to install a proper quenching apparatus which, by rapidly cooling the hot billet, gives it the desired tensile strength. It was not until February 1956 that a cold water quenching conveyor was installed which solved the problem of elongation. The coining and nosing presses were "down" as late as May 1956. Defects in the die designs, which affected the concentricity of the shells, required constant changes. There were delays in the handling and conveyor systems.

43. As late as early November 1955, it had not yet been determined that turning equipment would be required in the shell line at Eau Claire. Plaintiff's exhibit No. 79, which is in evidence, is a trip report of Mr. A. H. Sundfor, chief of the Facilities Branch, COD, reporting on a conference he attended at plaintiff's plant with plaintiff's officials, including Mr. Soper and Mr. Halpern, reads in part as follows:

> 3. Relative to the necessity for turning or grinding the hot-forged forging prior to cold working, representatives of CHOD and National Presto recommend that this decision be deferred for at least 60 days in view of the experience that will be gained in that period from future production. National Presto's work on pilot lots indicates that excellent possibilities exist that this turning operation will not be necessary, but it is of course too early to make a statement at this time. In a subsequent meeting in CHOD on 4 November 1955, Mr. Grazioso of OAC, stated that he did not concur with this recommendation and would recommend that Government surplus turning equipment be installed and tooled at Presto immediately for at least one line. In this 4 November meeting Mr. Harold Babcock of Frankford Arsenal further discussed surface quality and pointed out that his recent experimental work at ACF wherein finished unturned hot cup-cold draw shells were Macro-etched, showed surface defects. CHOD will attempt to have ten finished Presto shells shipped to Frankford Arsenal to be studied for surface condition.

44. By April 26, 1956, it was definitely determined by plaintiff and by Ordnance that additional equipment was

needed for stock removal after the hot forging, in order to insure concentricity of the shells. Ordnance agreed that such equipment was "absolutely essential" to the accomplishment of efficient and economical production of the shells under the hot cup-cold draw process. The plaintiff began to obtain quotations as to cost and delivery possibilities of such equipment at that time.

45. From November 1955 to April 1956, plaintiff continued, with defendant's acquiescence and approval, a process of trial-and-error to determine whether effective production could be obtained without turning equipment. The determination concerning the need for turning equipment was the result of the plaintiff's decision, with the consent of Ordnance, to bring over one lathe from the Menomonie line (after operations had ceased there) in February 1956. This was located in the tool room at Eau Claire as an experiment. This, in turn, required that longer billets be used which, in turn, required the redesigning and manufacture of new dies for the hot forge press. Success with the use of this lathe was demonstrated, and it, as well as three additional lathes from Menomonie, was placed in Line No. 1 at Eau Claire where a space had been provided in the original layout of machinery.

46. Between February 29, 1956, and September 28, 1956, 181,205 finished shells were produced at Eau Claire using the Menomonie lathes. This production, by month, is shown below:

Month	Quantity
February	7,968
March	3,984
April	19,962
May	31,962
June	35,894
July	19,939
August	23,923
September	37,573

47. From July 1 through July 15, 1956, in keeping with its usual policy, the plaintiff's factory operations at Eau Claire closed down in order that its employees might have an annual 2-week vacation.

48. The plaintiff, after authority to do so was given by the contracting officer, placed its order for 24 automatic

lathes for ultimate inclusion in the shell line (4 to each of the 6 lines). It was known at the time they were ordered that they could not be received in time for use in producing shells for the production contract (No. 1316). The plaintiff was directed to receive the lathes upon delivery but not to install them in the line, but rather to have them available when the line was placed in the standby condition at the end of the production contract. This was done. The cost of the lathes was a little over $1,200,000.

49. The total cost of machinery and its installation under the facilities contract, all of which was reimbursed to the plaintiff by the defendant, was, in round figures, $15,500,000.

50. The Trial Commissioner, at the request of the parties and in the company of representatives of and counsel for the parties, made an inspection trip in October 1961 to the plaintiff's plant prior to the trial of this case. The six shell lines were in a standby condition at that time.

51. On the basis of the experience gained at plaintiff's plant on the contracts here involved, all new shell lines that have been set up, including 8-inch shell lines at plaintiff's plant and at American Car and Foundry, are set up and will be set up on the hot cup-cold draw process. All of them have turning equipment in the form of lathes. On the basis of this and other evidence, it is found that this new process requires turning equipment (*i.e.*, lathes or comparable devices) for efficient and economical production on a mass basis.

52. Although inclusion of plunge grinders in the shell line was requested and desired by the plaintiff at the inception of the facilities contract, when the decision to include turning equipment was finally made, no one suggested the addition of plunge grinders. It seemed to be clear to everyone concerned at that time that automatic lathes were required.

53. At the time of the negotiations and the execution of the contracts in 1953 both parties were mistaken (excusably and in good faith) as to the actual need for turning equipment (*i.e.*, lathes or comparable machines) in the efficient and economical manufacture of these shells by the hot cup-cold draw process on a mass production basis. Both parties thought that such equipment would not be needed and both were excusably ignorant (in good faith) of the process of

trial and error, and the period of time, necessary to determine whether such turning equipment was or was not necessary. The parties were not satisfied as to the need for such equipment until the end of April 1956.

54. The plaintiff and the defendant, in October 1956, entered into another contract for the purpose of proving out Line No. 2 of the six lines installed under the facilities contract in suit. This "prove out" contract was for 235,000 shells at $7.60 per shell. These shells were produced using the Menomonie lathes.

55. Four of the six lines installed under the facilities contract have never been proved out.

56. 918,795 of the shells called for by the production contract in suit, as modified, were produced at the Menomonie plant of the plaintiff by the conventional process. The plaintiff's experience there shows a loss of $74,274.32, which is converted to a "black" figure when sales of scrap steel of $185,852.54 are taken into account resulting in a profit of $111,578.22 in producing the 918,795 shells.

57. In producing the 181,205 shells at its Eau Claire plant, the plaintiff sustained a loss of $755,804.01, computed as follows:

Production Costs:	
Material	$521,814.65
Direct Labor	101,510.29
Overhead	950,340.81
General and Administrative	165,383.21
Total	1,739,048.96
Sales Revenue	983,244.95
Loss	$755,804.01

58. No items of cost incurred prior to November 1, 1955, are included in the above computation, except for a small amount of overhead incurred in October amounting to approximately $5,000. Costs incurred in previous months were not included.

59. The price of steel which the plaintiff purchased after January 1, 1956, for production of shells under the contracts in suit, was increased by a total of $24,237.10.

60. Sales of scrap at Eau Claire in producing the 181,205 shells amounted to $13,088.86.

CONCLUSION OF LAW

Upon the foregoing findings of fact, which are made a part of the judgment herein, the court concludes as a matter of law that plaintiff is entitled to recover in accordance with the opinion, and judgment is entered to that effect. The amount of recovery will be determined pursuant to Rule 47(c)(2).

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